INDEX

AUTHORITIES CITED

Page

Act of 1918 (40 Stat. 705)..... 12, 14, 109. 111, 115
Ajax v. *Pettibone*, 125 Fed. 748, 753..... 52
Ansonia v. *Electrical, etc.*, 144 U. S. 11..... 100, 101
Barley v. *Witt & Co.*, 261 Fed. 77..... 80
Battin v. *Taggert*, 17 How. 74–84..... 16
Boyd v. *Jamesville*, 158 U. S. 260..... 28
Bragg v. *Fitch*, 121 U. S. 478, 483..... 42, 94
Brown v. *King*, 107 Fed. 498..... 101
Burns v. *Mills*, 143 Fed. 325..... 101
Burr v. *Duryee*, 1 Wall. 581, 572..... 89
Burroughs Adding Mach. Co. v. *Felt and Tarrant Mfg. Co.*, 243 Fed. 861..... 80
Castor v. *Spiegel*, 133 U. S. 360..... 42
Cimiotti, &c., v. *Amer. Fur.*, 198 U. S. 399..... 80
Clark v. *Willimantic*, 140 U. S. 481, 492..... 28
Cleveland v. *Chicago*, 135 Fed. 783..... 91
Clough v. *Barker*, 106 U. S. 166..... 76
Coupe v. *Royer*, 155 U. S. 565..... 111
Curtis v. *Cramp*, 211 Fed. 124, 135..... 81
Deering v. *Winona*, 155 U. S. 286..... 93
Doze v. *Smith*, 69 Fed. 1002..... 94
Douaglae v. *Superior*, 115 Fed. 886..... 49, 101
Duer v. *Corbin*, 149 U. S. 216..... 30
Duff v. *Sterling*, 107 U. S. 636..... 28, 29
Dunbar v. *Meyers*, 94 U. S. 187, found on p. 197..... 100
Dunlap v. *Schofield*, 152 U. S. 244..... 110
Eclipse Bicycle Co. v. *Farrow*, 199 U. S. 581..... 13, 17
Edison v. *American, &c.*, 151 Fed. 707, 773..... 80
Elizabeth v. *Pavement Co.*, 97 U. S. 137..... 80
Fay v. *Cordesman*, 109 U. S. 408..... 74
Filer, &c., v. *Diamond Iron Works*, 250 Fed. 454..... 41
Foley v. *U. S.*, 260 U. S. 667..... 97
Gill v. *U. S.*, 160 U. S. 426..... 111
Goodyear v. *Davis*, 102 U. S. 222..... 49, 74
Goodyear v. *Spaulding*, 101 Fed. 900..... 80
Gordon v. *Warder*, 150 U. S. 47, 54..... 28, 29, 91
Grant v. *Walter*, 148 U. S. 547–554..... 91
Green v. *Buckley*, 135 Fed. 520..... 48

	Page
Grever v. *U. S. Hoffman*, 202 Fed. 923	52, 74
Hailes v. *Van Wormer*, 87 U. S. 353	100
Hammond v. *Goodyear*, 58 Fed. 411	97
Harley v. *U. S.*, 198 U. S. 229	111
Hollister v. *Benedict*, 113 U. S. 59	100
Howe v. *National*, 134 U. S. 388	42
Hoyt v. *Horne*, 145 U. S. 302	89
Hubbell v. *U. S.*, 179 U. S. 77	52, 74
Ideal v. *Crown*, 131 Fed. 244	101
Imperial v. *Crown*, 139 Fed. 312	100
Ives v. *Hamilton*, 92 U. S. 426, 431	89
Jones v. *Campbell*, 104 U. S. 356–370	42
Judicial Code, sec. 154 (R. S. 1067)	15, 113, 115
Kennedy Mfg. Co. v. *J. L. Mott Works*, 137 Fed. 431	28
Keokuk & Hamilton Bridge Co. v. *U. S.*, 260 U. S. 125	16
Keystone Bridge Co. v. *Phoenix*, 95 U. S. 274	42
Knapp v. *U. S.*, 46 C. Cls. 601	112
Knapp v. *Morss*, 150 U. S. 221	29, 74, 91, 94, 97, 101
Kokomo v. *Kitselman*, 189 U. S. 8	28, 29, 80
Krupp v. *Midvale Steel Co.*, 191 Fed. 588, 610	93
Machine Co. v. *Murphy*, 97 U. S. 120	89
Mast Foos Co. v. *Stover*, 177 U. S. 485	29, 101
McCormack Co. v. *Cleal*, 12 App. D. C. 337	112
Mergenthaler v. *Scudder*, 11 App. D. C. 265	112
Miller v. *Eagle*, 151 U. S. 186	29, 91, 93, 94
Mitchell v. *Tilghman*, 19 Wall. 287, 391	42
Moore v. *U. S.*, 249 U. S. 487	111
Morey v. *Lockwood*, 8 Wall. 230	89
Morgan Envelope Co. v. *Albany Paper Co.*, 152 U. S. 425	74
Muller v. *Lodge*, 77 Fed. 621	94
Nevaslip &c., v. *Marcon Mfg. Co.*, 215 Fed. 117	35
Newton v. *Furst*, 119 U. S. 373	29
Outlook Envelope Co. v. *General Paper &c.*, 239 Fed. 877, 880	42
Palmer v. *Corning*, 156 U. S. 342	100
Palmer v. *McDermaid*, 54 Fed. 509	101
Pearce v. *Mulford*, 102 U. S. 112	101
Peerless v. *White*, 118 Fed. 827, 835	91
Peters v. *Active*, 129 U. S. 530, 537	91
Philips v. *Detroit*, 111 U. S. 604	100
Phoenix v. *Spiegel*, 133 U. S. 360	52
Pickering v. *McCullough*, 104 U. S. 310	100
Pittsburgh Meter Co. v. *Pittsburgh Supply Co.*, 109 Fed. 644, at p. 651	93
Pomace Holder Co. v. *Ferguson*, 119 U. S. 335	29
Price v. *Kelly*, 154 U. S. 669	94
Reece v. *Globe*, 61 Fed. 958	49
R. S. Sec. 4900	14, 109, 110, 115
Robinson on Patents	80, 93

	Page
Roemer v. *Peddie*, 132 U. S. 313	52
Royer v. *Roth*, 132 U. S. 201	100
Sargent v. *Hall Safe & Lock Co.*, 114 U. S. 63	74
Sessions v. *Romadka*, 145 U. S. 29	89
Shepard v. *Carrigan*, 116 U. S. 593	52, 74
Shipman v. *Frank*, 237 Fed. 395	101
Singer v. *Cramer*, 192 U. S. 265	28, 49
Standard Tobacco v. *Stemming Co.*, 237 Fed. 822, 827	80
Thatcher v. *Burtis*, 121 U. S. 286, 295	91
Tucker v. *Spalding*, 1 Wall. 453, 455	16
Union v. *Diamond*, 162 Fed. 148	28
Union Pacific Ry. Co. v. *U. S.*, 116 U. S. 154, 157	16
U. S. v. *Anciens Establissements &c.*, 224 U. S. 309, 322	16
U. S. Hoffman Co. v. *Lasance*, 202 Fed. 923	52, 74
Walker on Patents	16, 27, 28, 48
Weber Elec. Co. v. *Freeman Elec. Co.*, 256 U. S. 668	52, 74
Westinghouse v. *Power Brake*, 170 U. S. 561	28
Westinghouse v. *Boyden*, 170 U. S. 537, 558, 568	42, 81, 89
White v. *Dunbar*, 119 U. S. 47	42
Wright v. *Yuengling*, 155 U. S. 47	28, 94

SUBJECT INDEX

	Page
Chronological Synopsis of Principal Points of the Findings of Fact	1

APPELLEE'S BRIEF

Errors in appellant's brief	3
Brief outline of case	12
Appellee's contentions	13
First section of brief: No arguable question of law, in view of the finding of fact that appellee does not use devices of appellant's patents, nor infringe the latter	15
Second section of brief: A. The construction of oil burners; the two types, steam and mechanical atomizers. The development of these types. The patents in suit and their interpretation	17
A. The problems of atomization, and the supply of air for combustion	17
Difference between the two types, mechanical atomizers and steam atomizers	18
The peculiarities of construction of steam atomizers	19
Comparison of functions	20
Problems of oil atomization and supply of air for combustion separate and distinct	20
Appellant's are steam atomizers while appellee's are mechanical atomizers	21
Examples in prior art of mechanical atomizers shown in exhibits	21
Examples in prior art of steam atomizers shown in exhibits	23
B. Interpretation and scope of patents in suit	24
Appellant's contention	24
Appellee's contention	26
Analysis of patents in suit, No. 945,873	30
Analysis of claim of patent No. 945,873	32
Analysis of patent No. 1,066,161	34
Analysis of claims of patent No. 1,066,161	37
Scope of patents shown by phraseology of specifications themselves	41
Scope shown by applicant's statements in proceedings in Patent Office	48
Scope shown by applicants distinguishing from prior art	51

Second section of brief—Continued. Page
Scope shown by decision of Board of Examiners in Chief-- 56
Scope shown by appellant's real gift to public---------- 64
Extract from opinion of Circuit Court of Appeals for Second Circuit as to scope of patent No. 1,066,161------ 77
Third section of brief: Noninfringement. What appellee has done and does; merely utilizes what was already in its possession of the prior art; that which would not anticipate if earlier will not infringe if later; identity of appellee's devices with the prior art; the burden on appellant to show infringement---------- 78
Parallel comparison of appellant's and appellee's structures and modes of operation---------- 86
Specific analysis and comparison of appellee's structures with those of appellant---------- 86
Summary on lack of identity and noninfringement---------- 97
Fourth section of brief: Invalidity of appellant's patents because showing lack of novelty and invention and because they are fully anticipated by prior art---------- 98
A. Lack of invention---------- 98
Only mechanical skill shown in appropriating features of various patents in prior art---------- 99
No new function, mode of operation, or new or improved result---------- 99
Mere mechanical skill employed in selection of old features from prior art---------- 99
Patents fail to show invention, even under test of commercial success---------- 101
B. Complete anticipation by prior art, and consequent invalidity, either if narrowly or broadly construed-- 101
Complete anticipation especially shown by comparison with following patents:
Kermode---------- 104
Pages---------- 105
Lee---------- 106
Armstrong---------- 107
If patents are in fact invalid, court should so find for benefit of public---------- 108
Fifth section of brief: Appellant's failure to mark patented or give notice of infringement bars recovery, and Court of Claims' finding of that fact is sufficient basis for its conclusion of law dismissing petition---------- 109
Sixth section of brief: Appellant's employment by Government at time of making application for patent No. 1,066,161 precludes recovery under that patent even if infringed; and the Court of Claims' finding of that fact is sufficient basis for its conclusion of law dismissing petition---------- 111
Seventh section of brief: The pending of suit in another court against another person for infringement of patent No. 1,066,161 in the making and selling devices for the Govern-

Page

ment at time of filing appellant's petition, precludes appellant from recovery from the Government for the use of such devices, and should have prevented his bringing or prosecution of this appeal; and of itself warrants its dismissal, so far as it involves patent No. 1,066,161 and the devices alleged to be covered thereby. And the finding of fact of the Court of Claims that such suit so pending is sufficient basis for its conclusion of law dismissing the petition_ 112
Conclusion _____ 114
Appendix—Decision and opinion of Circuit Court of Appeals for Second Circuit in suit of *Stilz* v. *Babcock & Wilcox Co.*, on patent 1,066,161_____ 116
Illustrations:
Drawing of Stilz patent 945,873 (Ex.-A)_____ 30
Drawing of Stilz patent 1,066,161 (Ex.-B)_____ 34
Drawing of Schutte patent (Ex. C-2)_____ 52
Drawing of Laing patent (Ex. D-6 and D-8)_____ 54
Drawing of Chaney & Wires (Ex. C-3)_____ 72
Drawing of structure devised by Navy Department and tested at Norfolk in 1909 (Ex. C-17)_____ 78
Drawing of Normand Burner used on "Paulding" and "Drayton" (Ex. D-4 and D-7)_____ 80
Government's "Bureau Standard Forced Draft" (Ex. E-1 (and E-2) _____ 82
Government's "Bureau Standard Natural Forced Draft" (Ex. E-3 and E-4)_____ 82
Government's "Bureau Standard" (Ex. E-5 and E-6)__ 82
Government's "Peabody Register Burner" (Ex. E-7)____ 82
Drawing of patent to Bevis (Ex. D-5)_____ 84
Drawing of patent to Billow (Ex. C-7)_____ 84
Drawing of patent to Kermode (Ex. C-8)_____ 104
Drawing of patent to Pages (Ex. D-2)_____ 106
Drawing of patent to Lee (Ex. G-14)_____ 106
Drawing of patent to Armstrong (Ex. C-12)_____ 108

In the accompanying illustrations, which are mostly in section, the parts relating to the oil supply, and especially for the mechanical atomization of the oil, are colored green.

Those relating to the utilization of steam or other gaseous medium for that atomization are colored red.

Those relating to admission of air for combustion are colored blue.

Yellow represents refractory material.

Brown represents oil.

In the drawings of the appellant's patents, the appellee's devices, and the structures illustrating the prior art the parts having the same function are given the same color.

In the Supreme Court of the United States

OCTOBER TERM, 1924

HARRY B. STILZ, APPELLANT
v.
THE UNITED STATES
No. 296

CHRONOLOGICAL SYNOPSIS OF PRINCIPAL POINTS OF THE FINDINGS OF FACT

From 1900 to 1905 Mr. Stilz, the appellant, was an employe of the Government in the Bureau of Construction and Repair of the Navy Department. (Finding I, p. 3, Trans. of Rec.)

From 1905 to 1911 he was at various times in the employ of the United States Navy Yards at Philadelphia, Pennsylvania, and Mare Island, California. During such employment his duty and work included the examination, designing, and making of drawings relating to oil burners or oil-burning devices for oil-heated furnaces, and he had access to the various drawings, blue prints, and publications relating to such devices at the places where he was employed. (Finding I, pp. 3–4, Trans. of Rec.)

November 18, 1908, Mr. Stilz filed an application for patent on an improvement in oil burners. (Finding II, p. 4.)

January 11, 1910, this issued as a patent No. 945873, and is one of the patents in suit. (Finding II, p. 4.)

May 8, 1911, Mr. Stilz, while in the employ of the United States, filed an application for improvement in oil burners. (Finding III, p. 4.)

July 1, 1913, this issued as a patent No. 1066161, and is the other patent in suit. (Finding III, p. 4.)

February 16, 1922, Mr. Stilz filed petition in the Court of Claims, at which time there were pending in the United States District Courts for the Southern District of New York and the Eastern District of Pennsylvania, respectively:

> Suits by him against the Babcock and Wilcox Company of New York City and the Schutte and Koerting Company and the Bethlehem Shipbuilding Corporation of Philadelphia, Pennsylvania, for an injunction against each of the defendants in said suits and an accounting by them for profits for alleged infringement by them of the plaintiff's said letters patent No. 1066161 in the manufacture and sale by them of certain oil burners, some of which were alleged to have been sold to the United States Navy for installation and use on naval vessels of the United States. (Finding XIII, p. 9.)

February 14, 1922, the above suit against the Babcock and Wilcox Company was still pending. (Finding XIII, p. 9.)

January 22, 1923, the suit against the Schutte and Koerting Company and the Bethlehem Shipbuilding Corporation was still pending. (Finding XIII, p. 9.)

So far as appears the suit against the Schutte and Koerting Company and the Bethlehem Shipbuilding Company is still pending.

BRIEF FOR APPELLEE

ERRORS IN APPELLANT'S BRIEF

The brief filed for appellant contains very many statements and matters wholly irrelevant and improper; and which are not only unsupported by the Findings of Fact, but quite contrary to them.

Lest, by failing to refer to them here, we should seem to acquiesce in them, we take this opportunity to comment briefly on some of the most apparent before proceeding to discuss the appellee's position.

On page 18 of his brief appellant alleges identity of function of the device of his patent 1066161 and the burners in suit (appellee's burners). This has no foundation, in fact, and is denied, and is indeed contrary to the Findings of Fact IV, VII, and IX, where it is clearly shown that the devices shown in the patents in suit are " steam atomizers " relying on the function of steam or other gaseous fluid as an atomizing agent (Finding IX), whereas the devices alleged to infringe use no such medium, and rely purely on " mechanical " means; that is to say, the

> projection into the furnaces under heavy pressure through spiral passages in the nozzle end of the burner * * * no steam, air or other gaseous fluid was introduced into or used in the burner proper for any purpose nor used with any part of the equipment for the atomization of the oil, etc. (Finding VII.)

In the last paragraph, at the bottom of page 18 of appellant's brief he says:

> The discovery which is disclosed in patent 1,066,161 was made during August, 1910,

and refers to paragraph V on page 2 of the transcript of record to substantiate the statement. But this reference is to a mere allegation of the petition which was not proved later by the evidence. The date of invention or discovery of the alleged invention must be presumed to be the date of filing of the application for the patent—in the absence of proof of an earlier date. This date, according to Finding of Fact III, was May 8, 1911—when appellant was in the employ of the United States. This is further admitted in paragraph 2 on page 19 of his brief.

The assumptions and conclusions on page 19, paragraphs 4 and 5, are unwarranted and contrary to the findings, and the statement is misleading. That appellant discovered a new principle in the art of burning fuels is disproven by the prior art (set out in Findings V and VI) particularly by

the British patents to Armstrong, the British and American patents to Kermode and the American patent to Lee, some of which, by the way, were not before the Board of Examiners in Chief when it allowed the claims; and the claim that the monopoly which appellant alleges was granted to him extends to defendant's devices, because of his inference that the latter operate on the new principle which he unjustifiably claims to have invented, is opposed to the Findings of Fact IV, VII, and IX.

The latter part of paragraph 5, page 19 of appellant's brief, specifying what constitutes the "Novelty" of his invention, is entirely unjustified and contrary to the fact and the Findings. Neither do his claims show nor does his invention "consist in the production of the whirling cone of fuel which by centrifugal action is projected through the *air which is supplied for its combustion.*" But on the contrary, according to Finding IX, page 8—

> The oil leaving the inner orifice in a conical film or spray is struck by the rotating *steam before it passes through the outer orifice 19* (of the atomizer casing 17), which *steam* aids in the atomization of the oil. (Italics and parenthesis ours.)

the air for *combustion* having no such function (Finding IX). But if appellant's contention as to what constitutes the "*novelty*" of his invention be true, he has pronounced his own doom, for the

prior art mentioned in Finding VI clearly shows the same construction and function, as was pointed out in the opinion of the court below, page 13, transcript of record. See also page 101 hereof.

Appellant's statement on page 19 that the " invention in suit is basic in so far as a hollow cone-shaped spray of liquid is penetrated by a surrounding and whirling gaseous mass " is unfounded. It is an attempted expansion of his claim beyond the limitation of the only invention, if any there be, that is set out in the specification of his patent; it is disproved by the opinion of the Court, pages 13 and 14, and the showings in the prior art as set out in Findings V and VI, particularly the Armstrong patent; and if it were true it is immaterial, since Finding XI is conclusive on the point that none of the devices of appellant's patents has been manufactured or used by the defendant or that his patents have been infringed by defendant.

On p. 20 appellant gives a list of alleged " Errors in the decree of the Court of Claims." The criticism of the understanding of the invention and the law by that Court is not impressive after a reading of the very careful and extended statement in the Findings and Opinion.

As to paragraph (d) in this list of errors, it is pointed out that the allegation of notice made in the claimant's petition was not supported by the proof, as shown by finding XII.

The last paragraph on page 20, alleging the infringement of the patents in suit on the ground that

the defendant's structures " very clearly embody all of the elements which are set forth in said claim," is, of course, in toto, opposed to the Finding and is a mere conclusion of appellant. (Findings VII and XI.)

On page 21 of his brief, appellant has reproduced certain drawings illustrating in general defendant's structures, and has numbered their various parts with the numerals used in his patents in suit to identify other and different parts, in the endeavor to identify the parts shown in the figures of the patents having specific functions, with parts of the defendant's structures shown in the brief having *different* functions so as to make them appear the same. For example, the numeral 19 in the patent 1,066,161 is the orifice of a casing 17 which closely surrounds the oil nozzle 12 and forms an integral part of the complete atomizer 1. In the figures A and B of the brief showing Appellees structures, he gives the same numeral to the large aperture in the furnace itself in the effort to show that the whole register of the figures A, B, and C corresponds to the specific integral casing 17 of the patent, and that the large aperture opening into the furnace from the register is the same as the opening 19 into the register from his casing 17. To make the inconsistency more apparent, attention is invited to figure 1 of the drawing of his patent (p. 11 transcript of record), where the aperture to the *furnace* is given the numeral 8 instead of 19, though in this instance the apertures are identical and should be given the same number to be consistent.

In this connection attention is further invited to page 8 of the Appendix to the appellant's brief where, at the bottom of the page, he has introduced a wholly imaginary structure so far as appears from any evidence in the case, apparently prepared for the purpose of showing the assumed similarity of defendant's structures with that of the patent in suit, and has marked the figure "U. S. patents Nos. 945873 and 1066161," which are the numbers of the patents in suit.

Appellant is entirely unjustified in his description on page 22 of his brief of the defendant's structure illustrated in Fig. C, page 21, where he says the "conical surface within the burner casing leading to the restricted discharge port 19, drives the whirling current of air in towards its axis of rotation, thereby causing it to penetrate the oil film."

This is misleading and false. Misleading, since the opening from the register shell into the furnace of the figure is by appellant numbered 19, evidently for the purpose of an attempt to identify it with the restricted orifice of the integral casing 17 of his patent as pointed out above, which casing is an *integral part of his atomizer*. As a matter of fact, this opening which he has marked 19 in Fig. C is nothing more or less than the opening 8 of his patent, Fig. 1, found on page 11 of the transcript of record, and *does not perform the function of 19 of his patent*. It is false, since it does not drive

the whirling current of air in towards its axis of rotation "thereby causing it to penetrate the oil *film.*" This is an *ex parte* expert argument, having no foundation in the record, contrary to the evidence, and opposed to the Finding of Fact VII. This finding shows that in Appellee's structures the oil issues from the nozzle in a cone-shaped *film* of liquid oil (not spray) which *almost immediately* develops into a fine spray. The air introduced only for combustion entering through the register and *outside* of the nozzle mixes with this *spray,* but has no atomizing effect and *does not penetrate the film of liquid oil.*

On page 23 of appellant's brief, in the last paragraph of his discussion of the oil burner illustrated in patent 1,066,161, occurs another of the many misleading statements and false conclusions. Especially that the patent claims in suit broadly cover all constructions which effectually accomplish the result specified, and that such result had never before been accomplished. The Findings V and VI refer to many devices and patents which do just this, and Finding IX clearly defines the limitations of the claims as embodied in the patent's specific structures.

On pages 22 and 23 of his brief appellant has selected certain points of *apparent* similarity in construction and operation between his devices and defendant's structures, and by specious argument and unjustified inference has sought to show identity or equivalence, but has slurred over the

specific features and functions of his alleged invention on which his claims are based, and *on which only* they were allowed, which specific features and functions are not present in defendant's structures and his statements and conclusions are thus contrary to the findings and opinion of the court below (Findings VII and X).

Another instance where the theoretical contentions of the appellant in the court below are advanced here without warrant from the record is the assertion (p. 26) that the Government's structures embody the principle of appellant's invention, because "the air currents in the burners in suit do assist in the atomization of the oil." This is not a true statement of the functions even of the patent in suit, and certainly is not true of the defendant's burners, which perform no such function. Appellant's contention may not be advanced on this record. On the contrary, the question clearly has been decided and is concluded by the finding of fact that in defendant's burners "no steam, air or other gaseous fluid was introduced into or used * * * with any part of the equipment for the atomization of the oil" (Finding VII) and by the Finding of Fact XI, that the defendant does not infringe.

The entire discussion of the history of oil atomization; the function and results of appellant's specific devices and the comparison of defendant's devices with appellant's patents and the patents of the prior art abounds in statements, many of which

find no foundation in the record, are properly matters of expert opinion, and many of which we can not accept, but are contrary to the Findings of the court below. Particularly on pages 27–28, the entire comparison of defendant's structures with appellant's patent claims in the endeavor to show that dissimilar parts of the one correspond to specific elements of the other, is opposed to Finding XI, and is an unjustifiable expansion and forcing of the language of the claims to include the defendant's structures.

The discussion of the adjudication of the patent 1066161 in the District Court in New York, found on page 29, seems irrelevant, but at least shows the attitude of another forum in full harmony with the Findings of the Court of Claims. It may be added that the appeal from the decision of this court to which appellant refers, has been since decided, affirming in full the decision of the District Court; and is printed herewith as an appendix, it not having yet been published in the Federal Reporter.

The matter on pages 29 to 33, inclusive, relating to ill treatment and persecution are not before this court. It is admitted on page 31 that the facts referred to are not brought out in evidence.

Finally appellant throughout devotes much more space and attention to his own unsuccessful contentions in the court below than he does to the record which that court has certified on this appeal. Thus

he prints as an appendix, beginning after page 32 of his brief, a circular apparently intended for the trade and an advertisement of his burner, showing structures differing from his patent drawings but marked with the numbers and dates of his patents, and containing discussions of principles of oil burning, advertising puffs, and general statements which are not and should not be in evidence or in the record, and are irrelevant on this appeal.

BRIEF OUTLINE OF CASE

This is an appeal from the decision of the Court of Claims in a suit brought under the Act of July 1, 1918 (40 Stat. 705), amending Act of June 25, 1910 (36 Stat. 851), to recover compensation for the alleged unauthorized manufacture and use of the United States of devices claimed to be covered by claim 2 of patent No. 945,873, dated January 11, 1910, and claims 1, 6, and 7 of patent No. 1,066,161, both granted to Harry B. Stilz, the appellant herein, for oil burners.

The court below dismissed the petition on the ground of non-user and non-infringement.

The patentee is the appellant.

Appellant attempts to expand a ruling of the Board of Examiners-in-Chief of the Patent Office, into a broad interpretation of the claims of patent 1066161 on which infringement by the United States is by him concluded; and to oppose that ruling to the Findings and opinion of the Court of Claims on the question of the scope of the claims and the fact of infringement.

And an attempt is further made to show the United States and the Navy Department in an inequitable position, as acquiring benefit from the appellant for which they seek to avoid making compensation, whereas as a matter of fact the Government has obtained nothing from the appellant. Its present burners are embodiments of the teachings of the prior art existing before the alleged invention of appellant, and were in principle and in practically identical form in use in Government vessels not only before the patent chiefly relied upon was issued, but before it was invented, according to the evidence and findings of the court below.

THE APPELLEE'S CONTENTIONS

1. There is no arguable question of law, the determination of which could lead to the reversal of the judgment below, in view of the Finding of Fact (XI) that defendant does not use any of the devices of plaintiff's patents in suit, and that no such devices were manufactured for it, and that said patents were not infringed by the defendant.

2. The patents in suit are of limited scope and can not be expanded beyond the reasonable language and meaning of the claims as governed and explained by the description of the real invention, if any, and as shown in the drawings of the patents; must be limited to the actual novelty of the disclosure of the patent application, irrespective of the form of the claims as finally granted (*Eclipse Bicycle Co.* v. *Farrow*, 199 U. S. 581);

and can not include and cover what was known to the public through printed publications before the date of the patentee's invention, and what the Government used before that time.

3. When properly construed the patents in suit are not infringed by the Government.

4. The patents in suit are void because they do not show invention and are anticipated by the prior act.

5. The court below found as a fact that the plaintiff had failed to show that he gave notice required by Section 4900 of the U. S. Revised Statutes as to the devices of his patents being patented, or that he at any time during the alleged infringement of said patents for which recovery is sought by him notified the defendant of such alleged infringement. (Finding XII.)

6. The court below found as a fact that the plaintiff while in the employ of the United States filed his application for patent No. 1066161, one of the patents in suit, and the one chiefly, if not solely, relied on by him to establish his claim for compensation for its infringement. (Finding III.) There is nothing in the case to show that invention antidated filing, which is therefore the presumptive date of invention. The Act of 1918 (40 Stat. 705) under which this suit was brought, in its third proviso denies the application of the act to such a patentee.

7. The court below found as a fact that at the time of the filing of his petition in that court, there

were pending in two different District Courts of the United States, suits againt other parties for an injunction and accounting for profits for the alleged infringement of his patent No. 1066161 in the manufacture and sale by them of certain oil burners which were alleged to have been sold to the United States Navy for installation and use on naval vessels of the United States, and that at the time of the decision, December 17, 1923, it did not appear that either suit had been dismissed or otherwise disposed of in said courts. (Finding XIII). Section 154 of the Judicial Code (R. S. 1067) prohibits the the filing or prosecution in the Court of Claims, or in this court, on appeal therefrom, of such a claim for which the claimant has pending in any other court, a suit against any person, who, at the time when the cause of action alleged therein arose, was in respect thereto acting or professing to act mediately or immediately under the authority of the United States.

FIRST

There is no arguable question of law, the determination of which could lead to the reversal of the judgment below, in view of the finding of fact (XI) that defendant does not use any of the devices of plaintiff's patents in suit, and that no such devices were manufactured for it, and that said patents were not infringed by the defendant.

The court below has found (Finding XI) that defendant does not manufacture or use any of the devices of plaintiff's patent and that they have not been infringed.

This is a finding of fact.

U. S. v. *Anciens Etablissements, etc.*, 224 U. S. 309, 322.

The finding was made after exhaustive survey of the prior art, the consideration of expert and other evidence as to the structure and operation of the respective devices in a highly technical art, and a study of the claims of plaintiff's patents in view of that evidence. The contentions of plaintiff were all before the lower court and were duly considered in reaching its conclusion. The evidence on which that conclusion was founded is absent from the record here except that of patents and publications. There is not therefore before this court the material on consideration of which alone a contrary conclusion might be reached.

This court has refused, under such circumstances, to disturb the finding of the lower court.

Battin v. *Taggart*, 17 How, 74, 84.

Tucker v. *Spalding*, 13 Wall. 453, 455.

Keokuk & Hamilton Bridge Co. v. *U. S.*, 260 U. S. 125, 126.

Union Pac. Ry. Co. v. *U. S.*, 116 U. S. 154, 157.

See also Walker on Patents, Sec. 540, P. 598.

As this Court said in *Union Pacific Railway Co.* v. *United States*, supra,

> an appeal brings up for review only the decisions of that Court (Court of Claims) upon

questions of law arising in the course of the trial or in the application of the law to the facts as finally found.

SECOND

The patents in suit are of limited scope and can not be expanded beyond the reasonable language and meaning of the claims as governed and explained by the description of the real invention, if any, and as shown in the drawings of the patents; must be limited to the actual novelty of the disclosure of the patent application, irrespective of the form of the claims as finally granted (Eclipse Bicycle Co. v Farrow, 199 U .S. 581); and can not include and cover what was known to the public through printed publications before the date of the patentee's invention, and which the Government used before that time.

A

The construction of oil burners; the two types, steam atomizers and mechanical atomizers; the development of these types.

In the successful burning of oil for fuel, two problems are presented—

(a) The atomization of the oil—that is, its reduction from the form of *liquid* to that of a spray or fog, in which latter form it may be properly mixed with air for combustion.

(b) The supply of the proper amount of air in the proper manner and at the proper point to mix with this *already atomized oil spray* so that it may be rapidly and efficiently consumed.

The characteristics tending to solve these problems are inherent in all devices which accomplish with varying degrees of success the object desired.

There were at the time plaintiff filed his application two ways and two general types of structures for accomplishment of the first problem which differed chiefly in the method of and means for atomization of the oil; these methods were carried out by structures which were generally known and referred to as, in the one instance, " mechanical atomizers," and in the other " steam atomizers," although air under pressure could be used in place of steam if desired.

In the first type, the mechanically atomizing burner, the oil was atomized by purely mechanical means by being projected under great pressure from the oil aperture of the burner in a whirling cone-shaped film, which almost immediately developed into a fine spray (as a matter of fact the cone or *film* proper of *liquid oil* extends less than half an inch; the size of this may seem a small matter, but it has a very real importance in the differentiation between the operation of the appellant's and the appellee's devices, as will hereinafter appear); the second problem was solved by admitting air for *combustion only* through a surrounding air register, which air became more or less intimately intermixed with the large cone of oil *spray* (as distinguished from the small cone or *film* of liquid oil) before its entry into the furnace.

In the second type, the so-called steam atomizing burner, there was a combination with the stream of oil, *while yet within the atomizing nozzle of the burner proper,* of a stream of steam, or of air or

other gaseous fluid under pressure, for the *purpose of aiding in the atomization of the oil,* the necessary additional air for combustion being admitted through a register and intermixed with the oil *spray,* as in the case of the mechanically atomizing burner. (Finding IV.)

Practically the universal manner of constructing steam or air atomizers is to form a " casing " or cover *immediately* surrounding the oil aperture, and physically and structurally an integral part of the burner nozzle or atomizer proper, which " casing " leaves a small, narrow, confined space or mixing chamber in the nozzle, into which the oil enters, and into which the steam or air under great pressure also enters, and within the confines of which the steam or air under great pressure and high velocity is—because of the shape, size, and situation of this " casing " mixing chamber—forced into the *film of liquid oil* immediately upon the latter's entry into the mixing chamber of the nozzle. The steam or air thus has a rupturing or explosive effect upon the small *conical film of liquid oil* at its *apex,* and tears it apart, breaking it up into small drops and forming a " spray," which is carried along with the steam out of the restricted aperture of the " casing " of the nozzle and so through the outside register, in the form of a cone of spray or fog, where it further mixes with the additional air for combustion, but *without further atomization*—and so into the furnace. (See illustrations opposite pages 73, 85, 104, 105, 106, and 107.)

Thus it will be seen, on comparison of these two methods and structures, that in a mechanical atomizer the whirling action of the oil itself tends to break up or atomize the oil into a spray by its own centrifugal motion upon issuing from the oil orifice, without the assistance of any other agent such as steam or air; while in the steam atomizer it is the rupturing or explosive effect of the violently rotating steam or other gas under pressure as it impinges upon and penetrates the small cone or *film* of *liquid oil* at its *apex* as it issues from the oil nozzle and *inside* the *mixing chamber* of the *nozzle* formed by the integral surrounding " casing " of the burner proper.

Both forms of burners supply, through a separate register, additional air for combustion of the already atomized oil *spray* before its entry into the furnace.

It is to be noted that the problems of, first, the atomization of the oil, and second, the supply of air in the proper manner, at the proper point, and in the proper quantity for the sole purpose of securing efficient combustion of the already atomized oil, are entirely separate and distinct, though both must be solved in every burner installation, whether it be of the mechanical or steam type; and further that the supply of air for combustion is *additional* and supplementary to the air or steam used as an atomizer in the steam atomizers.

In brief, it is repeated that the difference between steam and mechanical atomizers lies in the

fact that the former utilize steam, air, or other gaseous medium introduced under great pressure and velocity into the *atomizer structure or nozzle itself,* to accomplish or assist in the atomization of the oil; while the latter do *not* utilize such medium, relying on the pressure and centrifugal motion of the whirling oil alone to accomplish that atomization.

The appellant's atomizers are essentially steam atomizers; the appellee's are as essentially mechanical atomizers. While it is true that appellants' atomizers may, if desired, be operated without steam or other gaseous medium and as mechanical atomizers, that is not their primary purpose, *and when so operated they are then indentical with the mechanical atomizers of the prior art in every detail, and embody no trace of novelty whatsoever.*

Examples of MECHANICAL ATOMIZERS are shown in the exhibits of the prior art referred to and forming a part of the findings of fact V and VI, notably:

Exhibit C–1, British patent No. 2,414, to Norton and Hawksley, Aug. 22, 1867.

Exhibit C–2, U. S. patent to Schutte, No. 391,365, Oct. 30, 1888, application filed Nov. 5, 1887.

Exhibit C–4, British patent to Rusden and Eeles, July 25, 1896; application Sept. 25, 1895.

Exhibit C–10, United States naval report, "Liquid Fuel," published in 1904, pages 321 to 331, inclusive.

Exhibit C–13, British patent to Meyer, No. 10,326, Jan. 24, 1907, application filed May 2, 1906.

Exhibit C–15, Blue print of drawing of Bureau of Steam Engineering, Navy Department, Washington, D. C., Jan. 6, 1908, No. "11–Y–130," sheet 1.

Exhibit C–16, Publication "Engineering," London, England, of June 19, 1908, pages 805 to 808.

Exhibit C–17, Photographic copy of drawing No. "11–Y–139" Department of Steam Engineering, navy yard, Norfolk, Va.

Exhibit D–1, French patent to Corneuve, No. 396,292, application filed Oct. 29, 1908, delivered Jan. 22, 1909; published Apr. 26, 1909.

Exhibit D–4, French patent to Normand, No. 396,955; application filed Dec. 1, 1908; delivered Feb. 9, 1909; published Apr. 26, 1909.

Exhibit D–5, British patent to Bevis, No. 20,653, Oct. 1, 1909, application filed Oct. 1, 1908.

Exhibit D–6, British patent to Laing, No. 15,747, Aug. 3, 1910, application filed July 6, 1909.

Exhibit D–7, U. S. patent to Normand, No. 1,020,048, March 12, 1912, application filed Nov. 11, 1909.

Exhibit D–8, U. S. patent to Laing, No. 1,025,279, May 7, 1912, application filed Feb. 16, 1910.

Examples of STEAM ATOMIZERS in the prior art are shown in the following Exhibits referred to and made a part of the findings of fact V and VI:

Exhibit C–3, U. S. patent to Chaney and Wires No. 481,088, Aug. 16, 1892, application filed Jan. 12, 1892.

Exhibit C–4, British patent to Rusden and Eeles, No. 17,938, July 25, 1896, application filed Sept. 25, 1895.

Exhibit C–5, U. S. patent to Moore, No. 584,951, June 22, 1897, application filed Nov. 21, 1896.

Exhibit C–6, U. S. patent to Chelimsky, No. 629,338, July 25, 1899, application filed Nov. 29, 1898.

Exhibit C–7, U. S. patent to Billow, No. 630,-320, Aug. 8, 1899, application filed June 28, 1898.

Exhibit C–8, U. S. patent to Kermode, No. 648,340, Dec. 5, 1899, application filed Dec. 5, 1898.

Exhibit C–9, British patent to Carr, No. 24,-021, Oct. 22, 1903, application filed Nov. 3, 1902.

Exhibit C–10, U. S. naval report, "Liquid Fuel," published in 1904, pages 77 and 268.

Exhibit C–11, British patent to Kermode, No. 15,269, July 8, 1905, application filed July 8, 1904.

Exhibit C–12, British patent to Armstrong, No. 3,089, Jan. 19, 1905, application filed Feb. 8, 1904.

Exhibit C–14, U. S. patent to Lee, No. 903,-736, Nov. 10 1908, application filed Aug. 15, 1907.

Exhibit D–2, French patent to Pages, No. 396,476, application filed Oct. 29, 1908, delivered Jan 28, 1909, published Apr. 13, 1909.

Exhibit D–3, Blue print of drawing No. "A643" by Schutte & Korting Co., Philadelphia.

Exhibit D–9, U. S. patent to Anthony, No. 1,023,707, Apr. 16, 1912, application filed June 1, 1910.

So many of these Exhibits of both types as are necessary to illustrate the prior art will be found reproduced in later portions of this brief.

B

Interpretation and Scope of the Patents in Suit. Analysis of patents in suit and their claims. Scope shown by phraseology of patents themselves; by applicant's own statements in proceedings in Patent Office; by applicant's distinguishing from prior art; by decision of Board of Examiners in Chief; by applicant's real gift to public; attitude of court of appeals for second circuit on scope of patent 1066161.

APPELLANT'S CONTENTION

Appellant contends that claim 2 of his patent No. 945873, relied on here, may be considered a genus claim, which broadly covers the defendant's structures, though he admits that " the device which is described in said patent, however, has no bearing

on the question at issue herein, since it belongs to a different species from the burners in suit." (Appellant's brief, p. 18, 3d paragraph.)

It is not clear how a claim which is based upon a description of a specific device, and must, on all the principles of the law of patents, be interpreted and limited, but not expanded by that description—can be a genus claim covering broadly an alleged infringing device, when the device described in the claim is *admitted* to be of a "different species" and to "have no bearing upon the question" of infringement at issue.

This patent will be fully discussed in this brief, although it is but little relied on by appellant, who has not included it in the other two suits against manufacturers who supplied to the appellee certain of the burners complained of. In the present appeal appellant contents himself with citing (p. 27, appellant's brief) certain merely surface resemblances between the elements of claim 2 and structures of appellee's burners.

Appellant's main reliance is on his later patent, 1066161, and the discussion of his brief is in the main devoted to that patent.

Appellant contends that patent No. 1066161 "is basic in so far as a hollow cone-shaped spray of liquid is penetrated by a surrounding and whirling gaseous mass." (Appellant's brief, p. 19.)

To reach this conclusion he contends that his claims may be expanded beyond the clear limita-

tions prescribed by the description and drawings of his patents in view of the prior art, to cover devices *omitting* his structural peculiarities and operating on an entirely different principle—because the language of his claims if read alone might appear to read on such devices.

APPELLEE'S CONTENTION

Beside the fallacy of this proposition as a matter of law, there is the further fallacy of fact subtly suggested—that is that his alleged invention discloses such a principle at all. These fallacies we shall endeavor to overcome in the following discussion in which we shall contend that appellant's patents show that his claims must be limited to those features of novelty not before known and shown in the prior art, but which are particularly illustrated and defined in his specification on which his claims are based.

Appellant's patents are clearly limited to an oil-burning apparatus in which one of the essential elements is a unitary or integral structure, comprising a nozzle having *in itself* independent inlets for a gaseous fluid and a liquid, and a mixing chamber common to both fluids located *in said unitary structure and a part thereof;* the whole unitary structure comprising merely an atomizer, and *as such,* distinct from and wholly unrelated to any means for supplying additional air for combustion. Any broader interpretation is impossible in view of the

prior art and the patentee's own admissions in his prosecution of the applications before the Patent Office; and with so broad an interpretation it is believed that the patents are invalid because clearly anticipated, as will be later shown.

If there be any patentable invention whatever disclosed in either of the patents in suit, it lies only in the particular combination of peculiar elements, specifically grouped and relatively located each to each, employing certain media and forces and performing definite functions, as set forth and described in the specifications and drawings of the patents; and the claims must be limited to such constructions and arrangements, which employ such media and forces, and perform such functions. See discussion in *Walker on Patents,* 5th Ed., Sec. 186, beginning on page 250, and decisions of this court there cited.

The inventions are not pioneer or generic inventions, but lie wholly in an adaptation of old and well-known devices, and differ from the latter, if at all, only in the *degree* of effectiveness, accomplished chiefly by variation in size of parts, but not in principle of operation. They can not therefore be given a broad interpretation by virtue of the doctrine of equivalents, but must be narrowly construed.

Appellant is at most a mere improver of other inventors' machines; hence is not entitled to such a construction of his patents as will cover the ma-

chines of still later inventors who have also improved on the original machines in a substantially different manner, or those who have merely utilized what was well known in the art.

Appellant's patents must be construed in the light of the prior art, and the more fully that art discloses the device subsequently adopted by him—the more narrowly must his claims and alleged invention be construed to cover only such novel features of form and construction as are clearly distinguished from what has gone before. (See *Walker on Patents*, 5th Ed., p. 245, and cases there cited.)

This principle is elemental and needs no discussion; it is set forth or applied in the following cases among many others:

Wright v. *Yuengling*, 155 U. S. 47;
Singer v. *Cramer*, 192 U. S. 265;
Boyd v. *Janesville*, 158 U. S. 260;
Kokomo v. *Kitselman*, 189 U. S. 8;
Union v. *Diamond*, 162 Fed. 148;
Clark v. *Willimantic*, 140 U. S. 481, 492;
Gordon v. *Warder*, 150 U. S. 47, 54;
Duff v. *Sterling*, 107 U. S. 636;
Westinghouse v. *Power-Brake*, 170 U. S. 561.

This court's decisions have been interpreted by Judge Coxe, in *Kennedy Mfg. Co.* v. *J. L. Molt Works*, 137 Fed. 431, at page 434, who said, in substance, that where it is shown that the field of invention was exceedingly narrow when the patentee

entered it, his claim, if it is to be upheld at all, must be limited to the feature described and shown; citing *Pomace Holder Co.* v. *Ferguson,* 119 U. S. 335; *Mast Foos Co.* v. *Stover,* 177 U. S. 485; *Miller* v. *Eagle Co.,* 151 U. S. 186, 207; *Kokomo Fence Co.* v. *Kitselman,* 189 U. S. 8.

This case is especially pertinent in view of the appellant's contention that his claims cover broadly appellee's separate air register through which a relatively mild current of air for combustion only, enters and mixes with the already mechanically atomized oil in the form of a large cone of spray—on the false reasoning that the combustion air register is an equivalent of his specific steam atomizing "casing" which the patent illustrates and describes as being integral with and forming a part of his atomizer nozzle proper, and in which casing steam *violently* impinges upon and atomizes the small conical film of *liquid oil* at its *apex* before it issues as a spray into the register, thus transforming it into that spray.

See also:

Gordon v. *Warder,* 150 U. S. 47, 54;
Duff v. *Sterling,* 107 U. S. 636;
Newton v. *Furst,* 119 U. S. 373;
Miller v. *Eagle,* 151 U. S. 186;
Knapp v. *Morse,* 150 U. S. 221.

Therefore, to discover just what the scope of the alleged invention really is we must consider the facts bearing on the issue of the patents, the language of the specifications as illustrated by the

drawings, and what was disclosed in the prior art which was presumably known to the applicant. (*Duer* v. *Gorbin*, 149 U. S. 216.)

ANALYSIS OF THE STILZ PATENTS IN SUIT

PATENT NO. 945873, DATED JANUARY 11, 1910 (EXHIBIT A).

For convenience, copies of Figs. 1 and 2 of this patent are here shown opposite page 30.

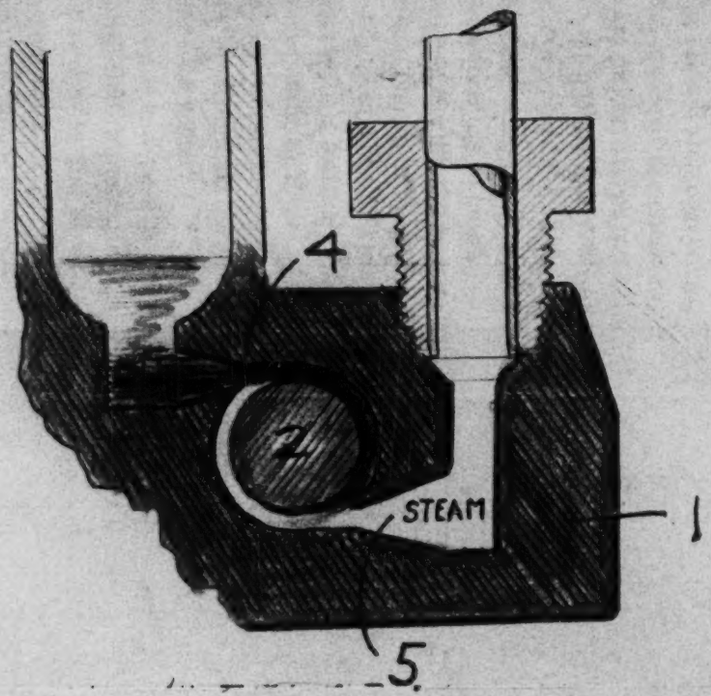
This patent describes and illustrates a *steam atomizer* which is capable of atomizing the oil, either mechanically or partly mechanically and partly with the assistance of some atomizing agent, such as steam, or substantially entirely by some such atomizing agency. The oil is whirled by entering a passage (4) placed tangentially to the axis of a chamber containing the conical plug (2), so that, if under any considerable pressure, it will enter this chamber with a relatively high velocity and whirl about the inside of the chamber with a rapid rotary motion. This chamber formed between the conical plug (2) and the inside surface of the outer casing (1) (see especially Fig. 2), is a shallow *restricted* passageway *confining* and *directing* both the oil and the steam, which enters at 5, so as to accomplish an intimate mixture of both, and *atomization of the oil inside the atomizer and before emerging from the orifice* (3). As a result, when oil alone is permitted to flow through the apparatus, it will flow out of the orifice (3) with a rapid rotation and will immediately form into a

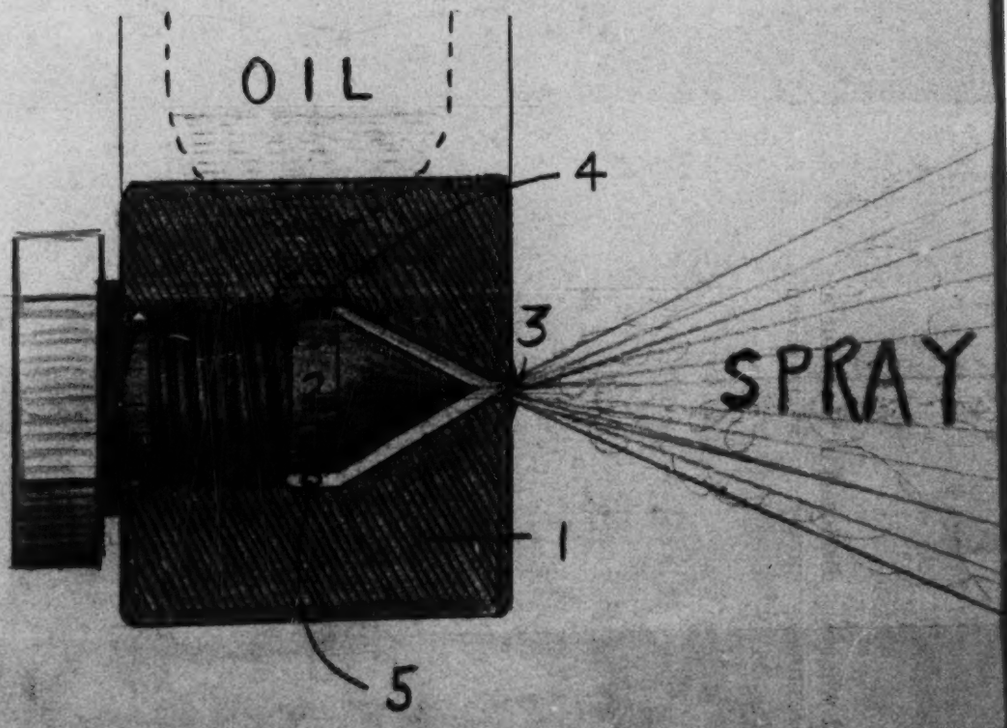
STILZ PATENT 945873.

Jan. -11-1910

Ex. A.

Fig. 1.





STILZ
945873.
Ex. A.

Fig. 2.

conical oil *film*, which will shortly break into a cone of oil *spray*, as is common with all mechanical atomizers in which the oil is rotated in this manner.

When steam is admitted through the passage (5) (see Fig. 1)—which is also placed tangentially with respect to the axis of the conical plug (2)—into the same chamber into which the oil flows, it immediately causes a mixture of the oil and steam to rotate at a very high velocity in the *inside* of the chamber, which velocity increases as the mixture flows toward the restricted orifice. The oil is thus finely *atomized by the steam before issuing from the orifice 3*, and flows in a widely diverging cone of oil *spray* along with the steam. When steam is so employed for the purpose of atomization of the oil, the method is substantially the same as that shown in the patent to Armstrong (Exhibit C–12), Kermode (Exhibits C–8 and C–11), Lee (Exhibit C–14), Anthony (Exhibit D–9) and in the French patent to Pages (Exhibit D–2), all of which are steam atomizers, and the patent to Pages refers to things stated to be well known in the art before its issue.

If, on the other hand, steam is not used for the purpose of atomization and that atomization is obtained mechanically and is due to the pressure of the oil alone, then the operation of the device would be identically the same as shown in many of the patents in the prior art already referred to as mechanical atomizers. (See pp. 21–22 hereof.)

In fact, the patent itself disclaims novelty for such mechanical atomizer. The specification states, on page 1, lines 32–39:

> Nozzles of the centrifugal type which deliver a jet having a high rate of rotation as well as a rectilinear velocity cause the issuing fluid to be atomized to such an extent that when operating in conjunction with an ample supply of air into a furnace with established high temperature complete combustion is effected.

This passage clearly is describing a structure known in the art and known to the inventor when the application was filed, such as is shown in patents to Schutte (Exhibit C–2), Bevis (Exhibit D–5), Meyer (Exhibit C–13), Norfolk test (Exhibit C–17), Normand (Exhibits D–4 and D–7), and many others.

ANALYSIS OF CLAIM 2

This claim, the only claim of this patent relied upon in this suit, is for a device comprising the following elements and characteristics:

1. A nozzle having a restricted discharge orifice. (The nozzle being (1) and the discharge orifice being (3) of Fig. 2.)

2. Independent inlets for a gaseous fluid and a liquid, there being a passage from each of said inlets to the discharge orifice (the inlets being (5) and (4), respectively, in the nozzle itself, and the " passages " being the single annular conical space

between the outer casing (1) and the plug (2) of the nozzle).

3. Said "passages" having a portion in common which forms a mixing chamber (the annular conical space in the nozzle, which is common to both inlets and forms a mixing chamber in the nozzle for the two fluids).

4. Each of said passages being arranged to produce a rotary motion in the fluid passing therethrough toward the discharge orifice (the tangential arrangement of the inlets (5) and (4) in the nozzle).

This claim is for a mere atomizing nozzle, and *specifies* and is *limited* to a unitary structure having independent inlets for *both a gaseous fluid and a liquid fuel.* These passages have a common mixing chamber and each of them enters the chamber tangentially for the purpose of causing a rotary motion in the fluid passing through it. This claim, of course, would not apply to a structure *in which* there were *not* provided passages for the use of *steam* or other *gaseous* fluid. In other words, the ordinary mechanical atomizing nozzle in which the atomization is caused purely and simply by the centrifugal force set up in the oil, due to its rapid rotation, would not have an inlet for a gaseous fluid, nor would it have a mixing chamber wherein the oil and the gaseous fluid would be mixed, and such a structure would clearly be without the terms of claim 2, which, we may interject here, *is the case*

with all of appellee's structures. It is to be noted that this atomizer shown in this patent No. 945,873 in suit is used in conjunction with an additional air register adapted to supply and control the admission of air for combustion into a furnace, which is an old device well known and many times illustrated in the prior art and almost universally used in connection with the atomizer, whether used as a steam atomizer or mechanical atomizer.

PATENT NO. 1,066,161 JULY 1, 1913 (EXHIBIT B).

For convenience, copies of Figs. 3 and 4 of this patent are here shown and will be found opposite page 34.

This patent discloses an oil burner provided with an oil atomizer which may be operated to atomize the oil mechanically, or which may be operated to atomize the oil partly mechanically and partly by means of an atomizing agent, such as steam or compressed air, or may be operated so as to substantially entirely atomize the oil by means of some atomizing agent. There is shown in Fig. 1 of the patent (not here reproduced), in connection with the atomizing nozzle a circular register provided with holes for the admission of air for combustion around the atomizing nozzle. Referring to Figs. 3 and 4, annexed, the atomizing nozzle is shown to consist of a plug (12) into which the oil flows through a pipe (9). The interior of this plug forms a chamber, the forward end of which is of conical shape and has a restricted orifice (14).

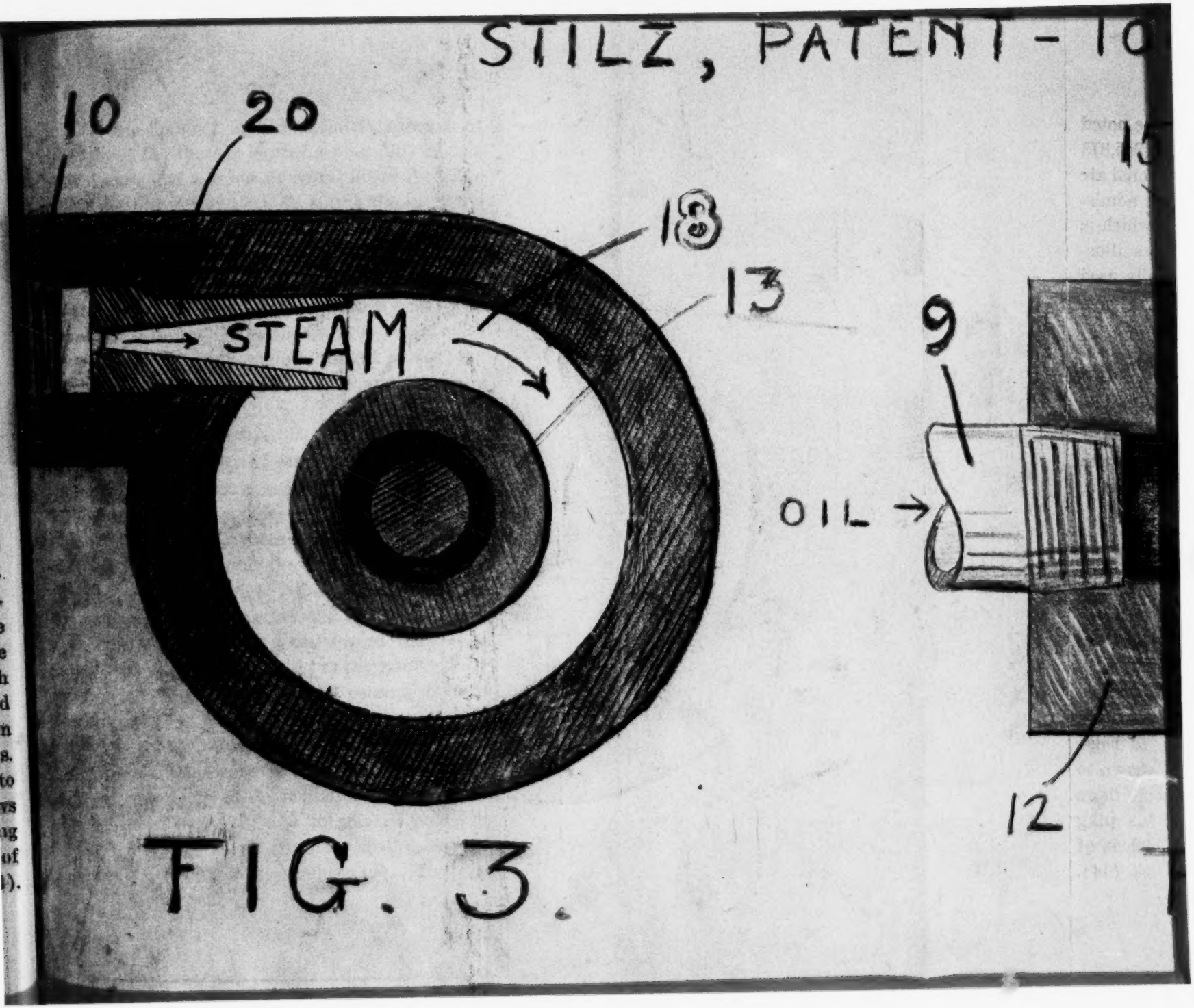


FIG. 3.

Z, PATENT - 1066161 - Exhibit - B.

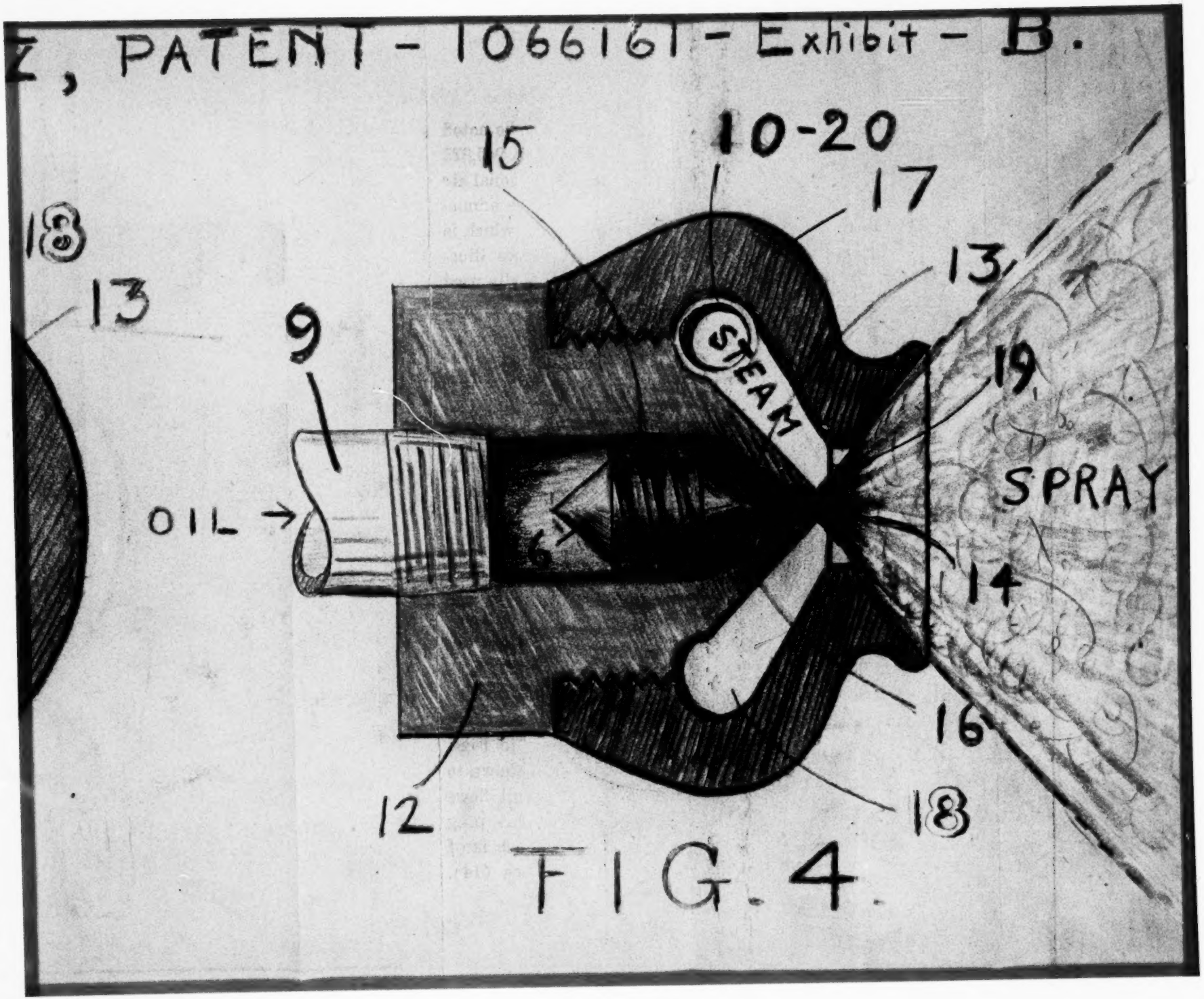


FIG. 4.

Within this chamber, and immediately adjacent to the orifice (14) there is located a plug (16) having conical ends and a screw or spiral about its outer circumference, around which spiral the oil flows on its way to the orifice (14), thereby being caused to whirl rapidly about the axis of the nozzle as it flows longitudinally through the same. Surrounding this plug (12) and *fastened to it* so as to *form a part of the complete atomizer* is a casing (17) so shaped as to leave a *shallow* conical passage between the inside of the casing (17) and the outer conical end of the plug (12).

Referring particularly to Fig. 3, annexed, steam or other atomizing agent flows through the pipe (10) into the circular chamber (18), which is the shallow conical passage above referred to. The axis of this pipe (10) is arranged tangentially to the passage (18) so that the steam flowing out of this pipe (10) at a high velocity rotates around in the passage (18), the velocity of this rotation increasing as the steam flows toward the orifice (19) of the casing (17), owing to the gradual constriction of the passage. The oil passing through the orifice (14) of the interior plug (12), as already stated, is rapidly rotated and immediately takes the form of a hollow conical *film* extending across from the outer edge of the nozzle (14) to the outer edge of the orifice (19) and substantially closing off the passage of steam from the shallow conical chamber (18) within the casing (17). The *vio-*

lently rotating jet of steam passing out of this casing as a consequence *penetrates this oil film, tearing it apart into minute particles,* or, in other words, *atomizing* it and discharging it into the furnace in the form of a cone of oil *spray* and steam substantially as indicated by the dotted lines in Fig. 4, annexed. The oil is consequently completely atomized on leaving the orifice 19, and the air for combustion, passing through the openings 5 in the register (4) as shown in Figure 1 of the patent, and thence through the opening (8) in the fire brick (the opening into the furnace), intermingles in the well-known manner with the conical *spray* of atomized oil, so that oil and air are in a proper state for the combustion to take place.

. The specification clearly indicates that the mechanical atomization of the oil is not considered sufficient and for the purpose of heating, as well as more completely *atomizing* the partially atomized oil, steam is desirably introduced. On page 1, lines 43–46, the specification states:

> In order to secure perfect combustion with this variety of oil a suitably directed jet of *steam* is a valuable adjunct for securing perfect *atomization.*

In line 66 the specification further states:

> In accordance with my invention the *steam* is brought into action upon the oil in such a manner that the mechanical action of the jet is not interfered with.

And, further, in lines 79–81, the specification states as an object of the invention—

> To reduce to a minimum the quantity of *steam* needed to assist in the *atomization* of the oil. (Italics ours.)

These quotations, together with the whole context of the specification, drawings, and claims indicate that the *essence* of the *invention* was the utilization of *steam* or other gaseous medium as an important feature, and as of the *essence of the invention* for the purpose of completely *atomizing* the oil.

In this case, as in the case of the former patent, under certain conditions the steam can be entirely shut off (see lines 103–109, p. 1), under which conditions of course, the atomizer acts purely as a mechanical atomizer such as is described as a prior art structure in lines 19–26 of page 1 of the specification, admittedly old and well known, and shown in many patents referred to, particularly on pages 21 and 22 hereof.

ANALYSIS OF CLAIMS

Referring to claim 1 of this patent 1066161 in suit, this claim consists of a combination of the following elements:

1. A *nozzle having a small discharge orifice* (the nozzle being (12) and the discharge orifice being (14) of Fig. 4).

2. *Means immediately adjacent to said orifice for producing a whirling motion in a liquid fluid pass-*

ing therethrough. (These means being the plug located within the nozzle (12) and having the conical ends (16) with the spiral threads (15) upon its outer circumference.)

3. A *casing surrounding said nozzle and having a restricted discharge* port concentric with said orifice. (This casing being the casing (17) having the restricted discharge port (19) forming an integral part of the atomizer.) The specification states in this connection, page 2, lines 101–112—

> The member (12) is screwed into or otherwise secured in a casing (17), which is provided with annular groove (18) extending around the base of the cone-shaped end of the member (12). The casing extends somewhat beyond the discharge end of the plug and is there provided with an outlet (19) somewhat larger than the outlet (14). The casing is hollowed out so as to produce a shallow annular passage extending around the cone-shaped end of the plug from the passage (18) to the discharge outlet (19).

4. *Means for causing a gaseous fluid passing through the space within said casing to enter said port in a whirling current.* (These means being the tangentially located nozzle 20 inside the casing 17 in conjunction with the shallow annular conical-shaped chamber lying between the inside of the casing (17) and the conical end 13 of the nozzle or plug (12).)

Claim 6 consists of a combination of the following elements:

1. A *furnace having an admission hole through its casing.* (This element being the furnace marked (1) with its opening (8), Fig. 1 of the patent.

2. A *nozzle having means for projecting a hollow cone-shaped film of oil from a round unobstructed delivery orifice into said furnace through said hole.* (This element is the nozzle or plug (12) shown in Fig. 4 and includes the small internal plug with the conical end (16) and the screw threads (15) thereon.)

3. *Means surrounding said nozzle for producing a whirling stream of gaseous fluid directed so as to penetrate said film of oil.* (These means being the casing (17) in connection with the steam inlet pipe and the steam nozzle (20) as shown in Figs. 3 and 4, and all forming an integral part of the atomizer.)

4. *Means for supplying air into the furnace through said hole.* (This element is the register (4) with the air admission holes through the circumference shown in Fig. 1.)

Claim 7 is a combination of the following elements:

1. *A furnace having an admission hole through its casing.* (This element being the furnace (1), the hole referred to being hole (8).)

2. *A lining of refractory material for said hole.* (This lining being shown in Fig. 1 and marked (3).)

3. *A nozzle having means for projecting a hollow cone-shaped film of oil into said furnace through*

said hole. (This element is the nozzle or plug (12), including the interior plug with the conical end (16) and spiral or screw threads (15).)

4. *Means surrounding said nozzle for producing a whirling stream of gaseous fluid directed so as to penetrate said film of oil.* (This element is the casing (17), including the steam connection (10) and the steam nozzle (20) shown in Figs. 3 and 4, and forming an integral part of the atomizer.)

5. *Means of supplying air into the furnace through said hole.* (These air-supplying means being the register (4) with the air inlets about its circumference as shown in Fig. 1.)

In commenting on the claims of this patent it is to be noted that the applicant in claims 6 and 7 refers to the " means " surrounding said nozzle for producing a whirling stream of gaseous fluid directed so as to *penetrate* said " *film of oil,*" this expression constituting element 3 of claim 6 and element 4 of claim 7. This penetration, which is a vital function of the specific atomizing means constituting one of the *essential* elements of each of these claims, is caused by the *violent whirling* of the *atomizing agent*—either steam or air—*in the casing* (17), and the fact that it is *concentrated by means of this casing* so that it impinges directly upon the conical *film of oil* just as this film forms after leaving the small orifice of the oil nozzle and *before the film has traveled far enough to break up into oil spray, and causes it to break up into spray.*

These parts which cause the steam to perform this function of penetrating the film of oil are *a part of the atomizer* itself, and have no direct connection functionally or otherwise with the register or the means for supplying additional air for combustion; these means for supplying air for combustion being *additional* means to those supplying the atomizing medium, and comprising the air register (4) with its holes, these being a distinct, additional, and separate element of the combination as set forth in claims 6 and 7; being the element 4 of claim 6 and element 5 of claim 7.

It is further to be noted that air for combustion entering the register (4) need not have any great amount of energy, as *this air does no work whatever upon the oil,* but simply needs sufficient energy to mix thoroughly with the atomized oil in the form of *spray.*

SCOPE OF PATENTS SHOWN BY PHRASEOLOGY OF SPECIFICATIONS OF THE PATENTS THEMSELVES

It is, of course, a well settled principle of law that claims are to be explained, construed, and interpreted by the specifications and drawings, and that a patentee's broadest claim can be no broader than his actual invention as so disclosed.

No patented invention can be practically or fairly understood or explained if the language of the claims is entirely dissociated from the specification, and the claims and specification should be read together. (*Filer Stovell Co.* v. *Diamond Iron*

Works, 250 Fed. 454, C. C. A. 7th Cir., 1918); *Mitchell* v. *Tilghman*, 19 Wall. 287–391; *Westinghouse* v. *Boyden*, 170 U. S. 537, 558; *Bragg* v. *Fitch*, 121 U. S. 478–483; *Caster* v. *Spiegel*, 133 U. S. 360; *Howe* v. *National*, 134 U. S. 388.

A claim is not limited to the particular shape specified and illustrated *unless something depends upon such shape*, but conversely, a claim *must* be so limited when *something does depend upon it*—that is, when the form and mode described are as a matter of fact the limitations of inventive thought. (*Outlook Envelope Co.* v. *General Paper Co.*, 239 Fed. 877–880, C. C. A. 2d Circuit.)

The case of *White* v. *Dunbar*, with its well-known illustration of the nose of wax is pertinent and cited as illustrative of the rule applicable to the instant case.

> *White* v. *Dunbar*, 119 U. S. 47 at p. 51;
> *Keystone Bridge Co.* v. *Phoenix Iron Co.*, 95 U. S. 274, 278;
> *Jones* v. *Campbell*, 104 U. S. 356, 370.

In the patent specification of No. 945,873 we find on page 1, lines 26 to 39 inclusive, that the patentee himself commences by admitting that at that time (date of his application)

> * * * successful burners employ means for breaking the oil into a fine mist or spray, which can readily be acted upon by the heat within the furnace, as well as be intimately mixed with the supply or air for supporting combustion. Nozzles of the centrifugal type

> which deliver a jet having a high rate of rotation as well as a rectilinear velocity, cause the issuing fluid to be atomized to such an extent that, when operating in conjunction with an ample supply of air into a furnace with established high temperature, complete combustion is effected.

In the specification of patent No. 1,066,161, page 1, lines 19 to 30, the complainant also says, speaking of apparatus *then known and used:*

> In the burning of fuel oil, atomized in passing through nozzles which spray it into a fine film by mechanical means (effected usually by the centrifugal action of a rapidly rotating jet from a small circular orifice, causing the oil to leave the orifice as an evenly spread mass over the surface of a cone), it has been found necessary, for obtaining the best results, to preheat the oil to such an extent that a portion of it will flash into vapor on encountering the lower atmospheric pressure.

and he considered that the novelty of the invention shown in his two patents lay in the additional particular structure and mode of operation which utilized steam in the manner and by the devices shown.

The burners referred to in the preceding quotations from both patents are shown in the various " mechanical atomizer " patents referred to in this brief.

82357—25——4

Referring again to the two patents of appellant, we find him pointing out what he relied upon as constituting the *novelty* of *his* invention, and in No. 945873 he states on page 1, line 42:

> At *this stage* (that is, when starting combustion at which time "auxiliary means are useful") the oil should preferably be diluted with *air, steam,* or other gaseous fluid, which affords an *additional agency* for not only *inducing a strong current of air supply* (for combustion), but also for distributing the *atomized* oil through a large volume. (Italics and parentheses ours.)

He then proceeds to describe the particular features of construction of his structure, which are necessary in the application of steam or other gaseous fluid for the purposes of carrying out his supposed invention, and which he claims *distinguish it from the structures of the prior art* which he has been referring to. Especially on page 1, line 69, he describes his atomizer in the following language:

> The NOZZLE, *composed of an outer casing 1,* into which is fitted a center 2, is constructed so as to form an annular space which gradually decreases in diameter to that of the orifice 3 through which the discharge is made. Oil and steam are forced through ports 4 and 5, respectively, into this annulus near its largest diameter in a line approximately tangential to the same and in directions as indicated in order to produce a rotation of the fluids *therein* (that is, the

> NOZZLE) in a given direction. The areas of the ports 4 and 5 and the orifice 3 are kept small in order that the *velocities* of rotation and projection may be great, so that the energy producing the same may be effectively utilized for *disintegrating* the oil. (Italics and parenthesis ours.)

Again, on page 2, line 5, he says:

> The *two* fluids mix *within the annular space of the* NOZZLE and on issuing from the orifice 3 at a high velocity they induce a strong current of air (through the register). When the current of air is supplied to the furnace by either forced or natural draft, the supply of steam may be cut off after the combustion has been properly established, the mechanical atomization of the oil alone proving sufficient under these conditions. (Italics and parenthesis ours.)

In patent No. 1066161 he also points out that the features of *his* invention lie in the peculiar structure and parts for the *atomization* by steam or other gaseous medium. For instance, he says on page 1, line 43:

> In order to secure perfect combustion with this variety of oil, a *suitably directed jet of steam* is a valuable adjunct for *securing perfect* ATOMIZATION; the *steam* which is introduced acting upon the oil in a manner similar to and producing results similar to those produced by the vapor which flashes into existence with such oils as can be partially vaporized.

And again, on the same page, line 63:

> In *accordance with my invention* the *steam* is brought *into action upon the oil,* etc.

And in line 74:

> Consequently my invention may be regarded as having for further objects the production of a burner which will efficiently burn any of the different kinds of fuel oil in commercial use and to reduce to a minimum the quantity of *steam* needed to assist in the ATOMIZATION of the oil.

And again, in lines 93 to 96:

> * * * to utilize the velocity of the *atomizing steam* in such a manner that it will be dissipated in diffusing the oil into a *spray,* etc. (Italics ours.)

He then proceeds to describe the peculiar structure of his atomizer, which includes the already-described casing, which, through its position and relation to the interior oil nozzle forms a *shallow* annular *confined* space in the NOZZLE into which the *steam* enters with a *violent* rotary motion to assist in *atomizing the oil;* showing throughout that his whole device is distinguished from the devices of the prior art known as " mechanical atomizers " through the very fact that he does utilize *steam* as an essential feature of his invention, and the portions which permit the *utilization of the steam are essential parts of his actual integral and unitary atomizing NOZZLE structure.* This is

particularly shown on page 2, line 101, where he describes the casing 17, inside of which the steam is confined and circulated, as being screwed or otherwise secured to the member 12, which is his oil nozzle forming also a part of the whole, so as to *form with it the mixing chamber.*

He further describes the *operation* of his device, particularly beginning in line 130 at the bottom of page 2 and continuing at the top of page 3, as follows:

> The operation is as follows: The oil leaves the *inner* orifice of the nozzle in a conical spray, and *before it can pass through the outer orifice* (of the nozzle) it is caught by the rotating *steam* and is perfectly *atomized.* (Parenthesis and italics ours.)

Finally, he says on page 3 of his patent No. 1066161, commencing with line 9:

> It will be seen that the quantity of *steam* required for *atomizing* purposes is of course greatest when the fire is being started. With a strong draft and high furnace temperature once established, the supply of steam can be greatly reduced and in some conditions completely discontinued without detracting from the efficiency of combustion. In this case the mechanical atomization of the oil suffices. (Italics ours.)

This clearly indicates that appellant undoubtedly contemplated and relied upon his peculiar structure constituting a *steam atomizer* to accomplish *atomization* primarily, for without this feature the

mechanical atomization which he states is possible after shutting off the steam, is merely a reversion to the old mechanical atomization, which, it has been and will hereafter be more at length pointed out, was very old and well known in the art.

From all of these quotations from his patent it is clear that *he* himself considered his invention to be not a mere "mechanical atomizer" but a "*steam atomizer,*" or one using compressed air or other gaseous medium in the same manner that steam could be used, and *distinguishing* the use of that steam or other gaseous medium and the *structure* adapted to so use it from the plain *mechanical atomizers of the prior art* in which air was only used for *combustion* and not for *atomization.*

SCOPE SHOWN BY APPLICANT'S OWN STATEMENTS IN PROCEEDINGS IN THE PATENT OFFICE, FILE WRAPPER AND CONTENTS EXHIBIT B-1

In the case of *Greene* v. *Buckley,* 135 Fed. 520 at 531, Judge Townsend, speaking for the Circuit Court of Appeals in the Second Circuit, expresses the rule that a patent must be construed in the light of amendments and arguments made while the application was pending and says:

> Where the patentee specifies a particular form as a means by which the effect of the invention is produced, or otherwise confines himself to a particular form of what he describes, he is limited thereby in his claim for infringement. (Walker on Patents, 4th Ed., Sec. 363 and cases cited.) * * *

> The words of limitation inserted in a claim must be construed in the light of the circumstances surrounding the issuance of the patent in order to prevent an undue broadening of the scope of the invention. (*Singer Mfg. Co.* v. *Cramer,* 192 U. S. 265, 285.) In interpreting such a patent the *admissions* and *declarations* of the patentee in the Patent Office, and amendments made by him which relate to the essence of alleged improvements and are directed to the question of invalidity, when understandingly and deliberately assented to, are binding upon him. (*Reece Buttonhole Machine Co.* v. *Globe Buttonhole Machine Co.*, 61 Fed. 958, 10 C. C. A. 194.) (Citing also other cases.) (Italics ours.)

and in *Dowagias* v. *Superior* (115 Fed. 886–896), in the Circuit Court of Appeals for the Sixth Circuit, the court said:

> Whatever doubt there might have been as to whether the claim was limited to the construction of its language by the specification, it was removed by the limitation which he put upon it by his *explanation,* the consequence of which was the allowance of his patent; and the claim must be read as *limited in this respect.* (Italics ours.)

As was clearly set forth by Mr. Justice Strong in *Goodyear Dental Vulcanite Co.* v. *Davis* (102 U. S. 222, 227):

> This construction of the patent is confirmed by the avowed understanding of the patentee, expressed by him, or on his (be)-

> half, when his application for the original patent was pending. We do not mean to be understood as asserting that any correspondence between the applicant for a patent and the Commissioner of Patents can be allowed to enlarge, diminish, or vary the language of a patent afterwards issued. Undoubtedly a patent, like any other written instrument, is to be interpreted by its own terms. But when a patent bears on its face a particular construction, inasmuch as the specification and claim are in the words of the patentee, it is reasonable to hold that *such a construction may be confirmed by what the patentee said when he was making his application.* The understanding of a party to a contract has always been regarded as of some importance in its interpretation. (Italics ours.)

Following this rule appellee's contention is further supported by the proceedings in the Patent Office in which the appellant by the argument of his attorney (which, of course, is constructively his own argument as it was accepted by him) finally secured an issuance of the patent. He says in Paper No. 6, page 3, of the file wrapper and contents (Exhibit B–1, Finding III):

> Applicant has found that the oil can be atomized most successfully only by introducing it into the *atomizing agent* in the form of a thin film or layer. This can only be accomplished by spreading the oil into a thin conical layer by a proper whirling action or other means. It is further necessary that the oil enter the *atomizing agent* BEFORE

> THE LATTER LEAVES *the* NOZZLE, since otherwise the results will be unsatisfactory. (Italics ours.)

And again on the same page:

> In applicant's arrangement the conical layer of oil is forced directly into the rotating current of gas *because the latter is confined in a narrow space surrounding and immediately adjacent to the restricted discharge orifice.* In this way there is a complete intermingling of the two elements and perfect atomization of the oil. (Italics ours.)

Thus the integral casing 17, forming this " narrow space," within which the " oil enters the atomizing agent *before the latter leaves the nozzle,"* is by the applicant himself shown to be an essential part of the atomizing NOZZLE itself, and is a vital element of his alleged invention. It was only because of this feature which he maintained *distinguished it from the prior art* of mechanical atomizers, that the patents were finally allowed; though even this feature was old as we shall show from other patents that were not before the Patent Office.

SCOPE SHOWN BY APPLICANT'S DISTINGUISHING FROM PRIOR ART

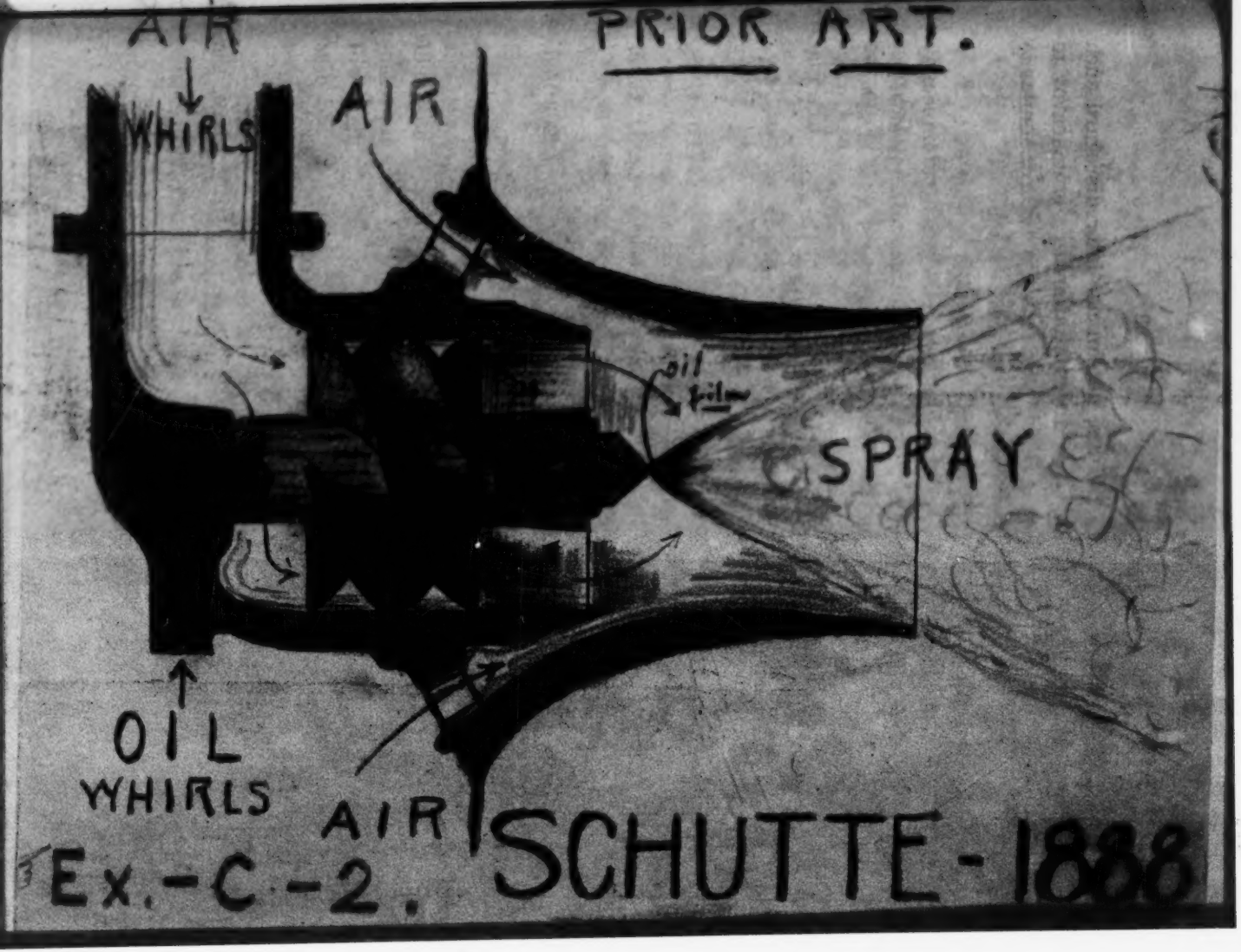
Where an applicant for a patent in his arguments or actions in the Patent Office, as shown by his file wrapper and contents, *distinguishes* his structure from *references to the prior art,* thus contending that his invention is *different* from

those references, he can not later disregard such argument and differentiation in the endeavor to maintain that his claims cover structures similar to the distinguished references.

> Having thus narrowed his claim * * * in order to obtain a patent, the patentee may not by construction or by resort to the doctrine of equivalents give to the claim the larger scope which it might have had without the amendments which amount to a disclaimer * * *.
>
> *Weber Elec. Co.* v. *Freeman Elec. Co.*, 256 U. S. 668 at 677.
>
> Citing *Shepard* v. *Carrigan*, 116 U. S. 593 at 598.
>
> *Hubbell* v. *United States*, 179 U. S. 77 at 80.
>
> *Grever* v. *U. S. Hoffman Co. et al.*
>
> *U. S. Hoffman Co.* v. *Lasance*, 202 Fed. 923.

If he was acting in good faith, he desired the Patent Office to understand that *his device was different from the reference.* There is no doubt that the Patent Office so understood his representations. Under these circumstances applicant will not be heard to assert *that the court should give the claims allowed a meaning which will cover a device similar to the reference.*

> *Ajax* v. *Pettibone*, 125 Fed. 748, see page 753. (C. C. A.)
>
> *Roemer* v. *Peddie*, 132 U. S. 313.
>
> *Phoenix* v. *Spiegel*, 133 U. S. 360.


PRIOR ART.
AIR
WHIRLS
AIR
oil
SPRAY
OIL
WHIRLS
AIR
Ex.-C-2.
SCHUTTE-1888

thos
argu
mai
the

If
Pate
diff
that
tatio
not
the
devi

Now, further on in this paper last cited (No. 6, p. 3, Exhibit B–1) he goes further and *distinguishes* his structure from that shown in the patent to Schutte (Exhibit C–2) (See illustration opposite p. 52), which is a patent for a " mechanical atomizer " not utilizing steam or air or other gaseous medium for atomization, but only for combustion. The necessary inference, of course, is that by so distinguishing from Schutte's mechanical atomizer and claiming that his device is different therefrom, his invention is consequently for a different type of atomizer—that is to say, one employing his peculiar structure and means utilizing *steam* or other gaseous medium for atomization—in other words, for a " steam or air atomizer."

In Paper No. 8, page 6, he again distinguishes his structure from that of Schutte in order to get around the Examiner's objection. Further along on the next page (7), he continues the argument that his device operates on a different theory and principle from that of Schutte, where he says:

> Applicant's burner depends upon small orifices, and this is just what Schutte tries to avoid.

(Right here it may be interjected that appellee's structures are substantially the same and operate on the same principle as the patent to Schutte which the appellant has so assiduously sought to distinguish from his invention.)

Continuing to quote from Exhibit B–1, the applicant states in Paper No. 10, page 2:

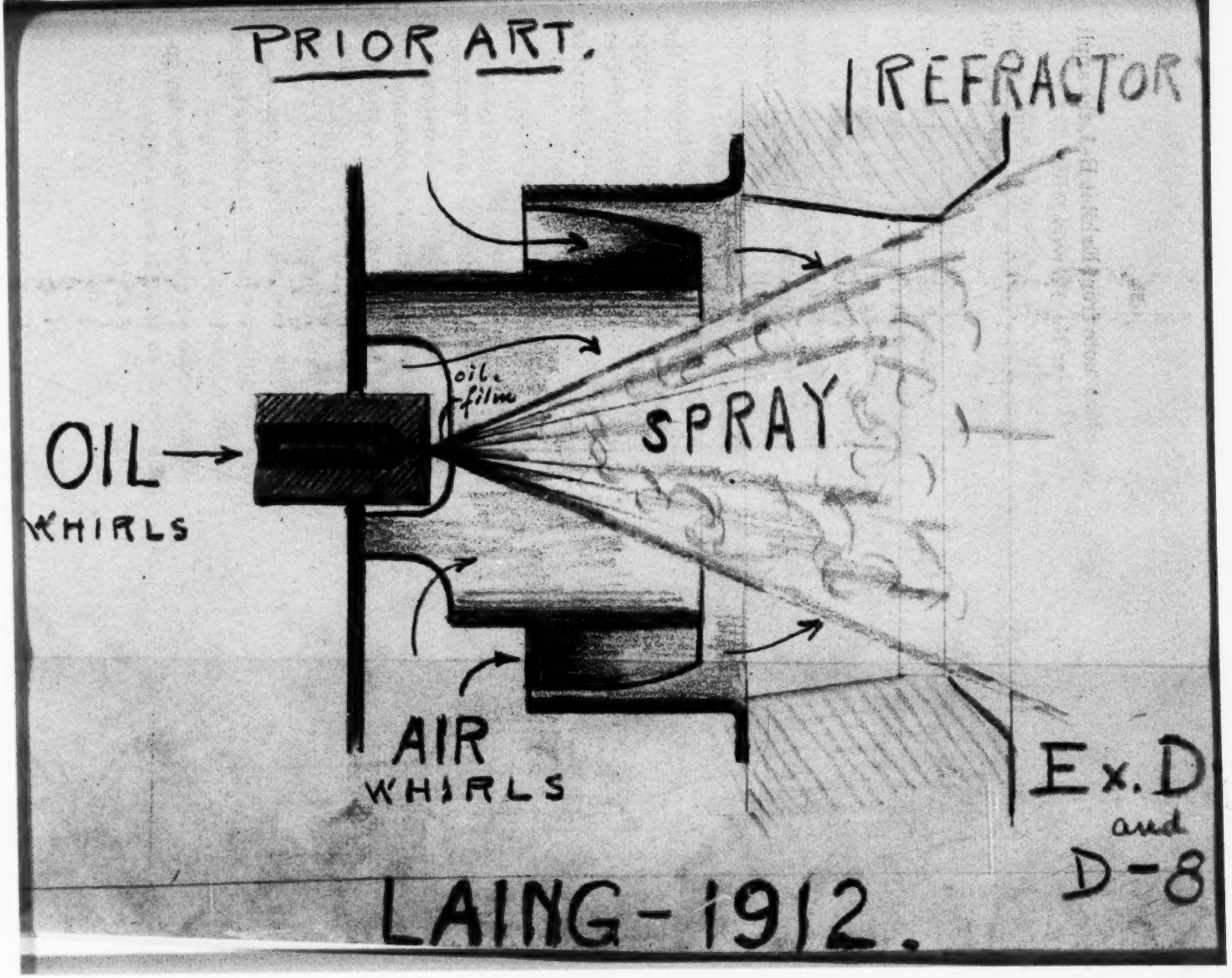
> To produce atomization *violent* action which will tear the small particles of oil apart is necessary.

This violent action peculiar to " steam or air atomizers " is accomplished, as he points out, by *his* device, but is *not* accomplished by the devices (" mechanical atomizers ") which he seeks to distinguish from his device, and which are substantially identical with the appellee's, and which latter, therefore, must be different from appellant's structures.

Our contention that appellant recognized the fact that his is the " steam or air atomizer " type is further strengthened by his statement further on on page 4 of Paper No. 23 of the file wrapper and contents:

> The extreme rigid characterstics of a stream escaping from under a high pressure through an orifice are well known. To *penetrate* such a *stream with a gas is impossible by any ordinary means.* Applicant has found that only by concentrating a *violently* whirling stream of gas at the *apex* of a cone-shaped *film of liquid,* and thus bringing into play powerful centrifugal forces, can heavier liquid fluid be thrown to the outer strata of the stream of gaseous fluid. (Italics ours.)

And finally, in Paper No. 23, on page 4, the applicant states:


PRIOR ART.
REFRACTOR
oil film
SPRAY
OIL
WHIRLS
AIR
WHIRLS
Ex. D
and
D-8
LAING-1912.

> **Claims 6 and 7 are rejected on Laing 1,025,279 (Exhibits D–6 and D–8) (see illustration opposite p. 54), which shows a means for whirling the air which enters the admission hole to the furnace, but the whirling air is *not directed to penetrate the oil film.* In applicant's device the whirling current of air, or other atomizing agency, *penetrates* the mechanically atomized film of oil, getting on the inside of it, and in *addition* there is shown a means for supplying the air into the furnace through said hole from a separate source.** (Italics and parenthesis ours.)

The Laing patent so distinguished, like Schutte's is subsantially identical with appellee's structures, and, as appellant himself maintains, is *different from his invention.*

It is clear, therefore, that appellant's contention for a broad construction of his claims to cover burners in which the oil is atomized mechanically and without the assistance of steam or other gaseous medium, and in which air is admitted to mix with the already atomized oil only for the purpose of combustion, is not tenable, but that the proper construction is, that it should be limited to a structure utilizing steam or other *atomizing agent* and more particularly to a structure which *in itself* comprises a nozzle whirling the oil, a casing practically integral immediately surrounding the oil nozzle and *forming a part of the atomizer* NOZZLE *proper,* inside of which steam or other atomizing agent is whirled in such a manner as to assist in the atomi-

zation of the oil *before it issues* from the atomizing NOZZLE structure itself into any additional device for supplying air for combustion, such as the register surrounding the aperture into the furnace. All of which is shown in his drawings and particularly described and declared to be his invention.

In his claims 6 and 7 of patent No. 1,066,161, the patentee specifies as his 4th and 5th elements, respectively—

> *and* means for supplying air into the furnace through said hole. (Italics ours.)

These are *additional* to the specified means for supplying air or other gaseous medium for atomizing the oil and are his register 4 with air openings. THUS BY HIS VERY INCLUSION OF THESE WELL-KNOWN MEANS IN HIS CLAIMS AS AN *ADDITIONAL* ELEMENT HE ADMITS THAT SUCH A REGISTER IS NOT AN EQUIVALENT OF THE STEAM OR AIR CASING USED FOR ATOMIZATION TO WHICH HE MAKES IT *ADDITIONAL* IN HIS CLAIMS.

SCOPE SHOWN BY DECISION OF BOARD OF EXAMINERS IN CHIEF (EXHIBIT B-1)

That the *Board of Examiners in Chief* clearly understood that the application for patent No. 1066161 contemplated and was *limited* to the peculiar integral device, with structural parts ar-

ranged as illustrated in the drawings and description and adapted to perform the function of atomizing the oil by the admission of a violently whirling current of steam *into the body of the atomizer nozzle itself* near the point of issuing of the oil jet into the confining mixing chamber, and was not for a device covering broadly a mechanical atomizer with means for admitting air outside of the atomizer for combustion only, is apparent from the language of their decision in which the reason for such decision is that—

> * * * there being in the prior art, as it is revealed by the Examiner, no construction in which a whirling *liquid cone of fuel* is projected through a surrounding and whirling gaseous mass. (Italics ours.)

Now, the *Board* had before them many of the instances of the prior art showing "mechanical atomizers" using air for combustion in which both the oil and air were whirled, but in which they thought evidently and correctly that the air or steam did not enter in a violently moving current so as to break up or penetrate the *liquid cone of fuel* so as to *atomize* it as is done in the peculiar form of Stilz atomizer because of the shape, proportion, and location of the casing 17 forming a part of the atomizer and immediately surrounding the tip of the oil jet. Therefore it is inconceivable that if they had felt that the claims were capable of the *broad* construction now sought to be given them by appellant, they would have allowed them in view of

the various instances of the prior art cited herein and which were before them, but which were " mechanical atomizers " and not " steam atomizers " or those using other gaseous mediums for atomization; and it is to be noted here in anticipation of a point to be treated further on, that the patents to Kermode (Exhibit C–11), Armstrong (Exhibit C–12), and Anthony (Exhibit D–9) were not before the *Board* and so were not considered by them in their decision, which it is believed would have been entirely different had they been so before them and considered, and in that case the claims would have been rejected by the Board for lack of novelty and invention.

Furthermore, the Board of Examiners evidently had in mind that the Stilz claims were *limited* to his *specific means* shown in the drawings, including the integral casing 17 and steam chamber 18, which projected, as the decision says, a *liquid cone of fuel* " through the surrounding and whirling gaseous mass "—for the patent to Schutte (Exhibit C–2) distinctly specifies that the fine *spray* or *mist* as an " expanding jet is projected centrally into a surrounding column of air (whirling) and mingles therewith (Exhibit C–2, p. 1, line 36). If this distinction and limitation of the Stilz patent is ignored, then Schutte must uncontrovertibly disclose the same idea of means, and the Board must have been in error in allowing the patent over the Schutte patent. It consequently seems clear from these quoted

passages from the contents of the file wrapper that the Stilz invention as set forth in the proceedings in the Patent Office was the production of a conical oil film and then directing a violently rotating stream of steam or air directly upon the *apex* of this conical *film*, thereby breaking it up into fine particles—that is, atomizing it. It is clear that the first essential is the production of this conical film of oil either by the rapid rotation of the oil or by other means, such as, for instance, were shown in figure 5 of the original drawing, exhibit B–1, and the *second essential was the production of a rapidly and violently rotating gaseous fluid, and so directing it and confining it that it would be compelled to penetrate the already formed conical oil film before this gaseous fluid could escape from the restricted discharge orifice of the containing nozzle casing.* Without both of these essential characteristics being present and coacting, as already set forth, there could be no possible novelty in the Stilz disclosure. Thus when the atomizing agent or rapidly whirling fluid is cut off, as stated in the patent, that it may be, under certain circumstances, the structure functions and operates exactly as many of the prior structures already discussed and in no way is different from them or an advance over them.

The quotations from the file wrapper which have been given show, first, clearly: That the atomization is performed *within the nozzle structure it-*

self and is entirely independent of the air supply, which is introduced through a separate structure, namely, the register, and that that air supply is simply for the purpose of supporting the combustion. Furthermore, these quotations clearly show that it is *essential that the oil be in the form of a thin conical layer, and that the atomizing agent act upon it before it leaves the nozzle.*

It is furthermore essential that the atomizing agent or the rotating current of gaseous fluid be *confined in the narrow space immediately adjacent* to the restricted discharge orifice, so that there may be perfect atomization of the oil.

It is furthermore essential that the orifices be small in order that the oil and the atomizing agent be brought together intimately, and by "small," according to the quotations which we have referred to, orifices or discharge openings such as are used in the Schutte U. S. patent No. 391865 (Exhibit C–2) are not meant, but small in comparison to these orifices, these particular ones being referred to as being "large." In one of the quotations it states that "applicant's burner depends upon small orifices, and this is just what Schutte tries to avoid." The small orifices are essential so as to *confine* the energy of the *atomizing agent* or the rapidly rotating gaseous fluid, since, as applicant states, "to produce atomization *violent* action which will tear the small particles of oil apart is necessary." This violent action is necessary, due,

as applicant states, to " the extremely rigid characteristics of a stream escaping from under high pressure through an orifice * * *." (Italics ours.)

In view of the above there can be no question as to what applicant had in mind, and from the quotation from the decision of the Board of Examiners already given, it is clear that they regarded that the invention lay in the formation of a whirling *liquid cone of fuel* and the projection of this cone of liquid fuel through a surrounding and whirling gaseous mass, which, in other words, means the same as directing the whirling gaseous mass upon this cone of *fluid* so as to atomize it. While in view of the prior art, some of which was not before the Examiners in Chief, we do not agree with their decision that it was novel to do this, the decision nevertheless clearly indicates the idea which the Examiners in Chief held as to the mode of operation of the Stilz device and for which the patent was granted. In this respect their opinion is in entire agreement with our contention on this point. Thus from the statements in the patents themselves; from appellant's own statements in the communications to the Patent Office while prosecuting his applications, especially in distinguishing from the prior art; and from the decision of the Board of Examiners in Chief of the Patent Office:—we must conclude that, referring to patent No. 945873: The *two* inlets referred to in claim 2 are inlets to

the *atomizer itself*. Neither one of them can by any stretch of the imagination be considered to be the air inlets into the register or the opening from the register into the boiler, inasmuch as these inlets are shown in the Stilz patent in *addition* to the independent inlet for a gaseous fluid and a liquid referred to in the claim. Of course, the mode of operation of the Stilz device is entirely different from mechanical atomizers, such as are the appellee's, inasmuch as the Stilz device depends upon the energy of an *atomizing agent* to cause the atomization, whereas mechanical atomizers, such as are appellee's, depend strictly upon the energy contained within the oil itself to cause its atomization. And with reference to claim 1 of the Stilz patent No. 1,066,161, the structure as set forth in that claim is *limited* to an atomizer having means for causing a gaseous fluid passing through the space *within the casing of the atomizer nozzle* to enter the discharge port of the atomizer nozzle in a whirling turn. The structure here set forth is the atomizing nozzle itself and the claim does not refer in any way to the register or the means for admitting air for combustion purposes. The gaseous fluid referred to in the claim is the *atomizing agent* used to *atomize* the oil. In mechanical atomizers such as appellee's structure there is no means for causing a gaseous fluid to pass through any space within the casing of the atomizer nozzle or to enter any port thereof in a whirling current. Appellee's

structure makes *no use of any atomizing agent whatsoever, but depends solely upon the energy contained within the oil itself to produce its atomization.*

As regards claim 6 of this last-mentioned patent, it is likewise *limited* to integral means surrounding the nozzle for producing a whirling stream of gaseous fluid therein, and is additionally limited to a structure *whereiu* this whirling stream of gaseous fluid is directed so as to penetrate the conical *film of oil* leaving the oil nozzle. The structure described in claim 6 is purely and simply a steam or other gas atomizer of specific form. Furthermore, in claim 6 it is impossible to interpret the means surrounding the nozzle for producing a whirling stream of gaseous fluid to penetrate the oil film as being the outside air register, because this claim further contains the element "*and* means for supplying air into the furnace through said hole." Which means is the register 4 of the Stilz patent and appears consequently in this claim as an element separate and distinct from, and additional to, the means to produce a whirling stream of gaseous fluid for atomization of the oil.

The same limitation applies to claim 7, the only substantial difference between these claims being that claim 7 is further limited to a structure having a "lining of refractory material for said hole."

Scope shown by appellant's real gift to public

We therefore may now sum up the argument as to the scope of appellant's patents by asking and discussing the question, " What did he give to the public, as a consideration for his patent grant, that the public did not have before? "

The measure of what he so gave is the measure of his monopoly during the life of his patents; and a corollary is equally true that anything utilized by the public which is or was presumptively in its possession can not be monopolized under a patent, nor held to be an infringment of a patent for a combination of old elements, even if that combination includes a new and patentable feature, unless the public also utilizes that new feature.

Taking up claim 7 of patent 1,066,161, first, we find that the appellant took from the prior art, which lay open to his hand, the first element of the claim (see analysis on p. 39 hereof):

> " A furnace having an admission hole through its casing." (This is shown as 1 and 8 in the patent drawings.)

This was well known; there was no novelty in it itself, or in combination with well-known oil burners, and it is specifically shown in the patents to Billow (Exhibit C–7), Armstrong (Exhibit C–12), Meyer (Exhibit C–13), Bevis (Exhibit D–5), Laing (Exhibit D–6), Corneuve (Exhibit D–1), and in the structure utilized in the Government's so-called

" Norfolk test," shown in Exhibits C–15 and C–17; in the publications " Engineering " (Exhibit C–16) and " Liquid Fuel, U. S. Naval Report " (Exhibit C–10, p. 331).

He then appropriated the equally well-known and old second element set out in the analysis on page 39:

> " a lining of refractory material for said hole." (Shown as 3 in the patent drawings.)

This is clearly shown in all of the last-mentioned exhibits.

Again, he abstracted from the prior art the old, old type of oil nozzle used as far back as 1888 by Schutte for the third element of his claim, and called it (again see p. 39):

> " a nozzle having means for projecting a hollow cone-shaped film of oil into said furnace through said hole." (Shown as 12, 14, 15, 16 in the patent drawings.)

Such a nozzle accomplishing the functions specified by expelling the oil through tangential openings is shown in the patents to Rusden and Eeles (Exhibit C–4), Laing (Exhibits D–6 and D–8), while the *identical* type of nozzle shown by him in which the oil is whirled through the blades of a spiral was undoubtedly copied by him from some one of the structures shown in patents to Schutte (Exhibit C–2), Armstrong (Exhibit C–12), Meyer (Exhibit C–13); in the structure of the "Norfolk test " (Exhibits C–15 and C–17); in the publications Engineering (Exhibit C–16), and

"Liquid fuel, U. S. Naval Report" (Exhibit C–10), all of which were presumptively or actually known to him.

But once more he puts his hand into the collection of available devices well known in the art of oil atomizing and burning and draws out the fifth element of the claim, as set forth on p. 40 hereof—

> "*and* means for supplying air into the furnace through said hole." (Italics ours.)
>
> (Shown as the box or register 4 having the openings 5 illustrated in his patent drawings.)

The air so supplied is for *combustion* only and is ADDITIONAL to any air that may be supplied for *atomization*. This box or register performs identically the same function—that is to say, supplying air for combustion after the atomization is complete—as is shown in the patents to Billow (Exhibit C–7), as far back as 1899 (Normand, Exhibits D–4 and D–7; Laing, Exhibits D–6 and D–8; Kermode, Exhibit C–11, fig. 7; Meyer, Exhibit C–13; Bevis, Exhibit D–5; Corneuve, Exhibit D–1); in the structure of the "Norfolk test" (Exhibits C–15 and C–17); and in the publications already mentioned (Exhibits C–16 and C–10).

So far appellant is only a borrower or appropriator of other men's ideas. He has taken everything from and given nothing to the public that it did not have before, since all the elements of his claims so far discussed are shown to have been well

known long before his alleged invention or application for patent, AND IN THE IDENTICAL COMBINATION AND ARRANGEMENT PERFORMING THE SAME FUNCTION BY THE SAME MODE OF OPERATION AND ATTAINING THE SAME RESULTS.

We come now to the fourth element of this claim, which at first sight appears to have some novelty; but this novelty, if it be such, will be shown to be apparent only and to lie solely in the matter of design or specific form adopted and not in the broad idea of means for accomplishing the end sought. But even were it novel and did it show the inventive faculty in merely adding it to other old and well-known devices, the very fact that it is the *ONLY* part that has even the shadow of a shade of novelty and invention among all the other elements shown to have been known in the prior art indicates clearly that the claim must be LIMITED TO A CONSTRUCTION EMBODYING THAT SPECIFIC FEATURE AND PARTICULAR FORM, since all else was admittedly old, and, furthermore, conclusively shown to be such by the prior art set out in Findings V and VI.

This fourth element is, as set out on page 40 hereof—

> "means surrounding said nozzle for producing the whirling stream of gaseous fluid directed so as to *penetrate* said *film of oil.*"

(Shown in the drawings as the casing 17, steam connection 10, and steam nozzle 20, figs. 3 and 4. Italics ours.)

This element or means comprises a particularly shaped and constructed atomizer casing or mixing chamber disposed and arranged in a particular relation to the well-known type of oil nozzle and forming a *unitary* or *integral* part of it, and the functions of which as he says in his patent and the arguments before the Patent Office which resulted in its grant, constitute the particular excellence of his device and *DISTINGUISH IT FROM THE PRIOR ART;* and this *SPECIFIC ATOMIZER CASING,* according to him, is new (although this is emphatically denied by Appellee), as will be hereafter shown more at length under the heading " Invalidity," page 98.

Referring again to this fourth element, the court's attention is again respectfully and urgently invited to the fact that the " means " referred to in this element are the *casing* 17, which forms a *structural* and what may be said to be an *integral* part of the *unitary* device called an atomizer, formed, as he himself describes on p. 2, lines 101 et seq. of his patent No. 1,066,161 by screwing or otherwise securing the casing 17 to the oil nozzle. Without this casing and associated parts *so* secured and arranged his device fails to perform the functions he claims for it, and if it were eliminated from his combination would leave

him nothing more than the well-known mechanical atomizer shown in so many instances or referred to in the prior art. He describes it and its special functions fully and in detail, beginning on page 2 of his patent at line 101, and continuing to and including line 8, page 3.

From this it will be observed that the feature claimed to be novel is really only the casing 17 "screwed" or otherwise "secured" to the oil nozzle 12.

At the risk of apparent and unnecessary repetition, attention is again invited to the specification of the patent No. 1,066,161 in the following quotations which are given at length in order to emphasize the contention that Appellant is LIMITED to the combination including this PARTICULAR feature in its SPECIFIC FORM and embodiment, and it is not to be confused with the portions of Appellee's structure which Appellant states are equivalents of it. In line 102 et seq., page 2 of the patent, Appellant says that the—

> casing 17 is provided with an annular groove 18 extending around the base of the cone-shaped end of the member 12—

and, further, the construction of the casing 17 is specified as being—

> *hollowed* out so as to produce a *shallow annular* passage extending around the cone-shaped end of the plug 12 from the passage 18 to the discharge outlet 19. (Italics ours.)

The steam in this casing 17 is described in lines 122 et seq., as flowing along the passage 18 and traveling toward the discharge outlet in—

> a *thin* whirling *layer*—

and as being in a condition of—

> *violent* rotation * * * around the axis of the nozzle—

and that the structure which includes this fourth element must necessarily be a " steam atomizer " is evident from the next passage found on page 2, line 130, and continuing on the next page:

> The oil leaves the inner orifice of the nozzle in a conical spray, and *BEFORE IT CAN PASS through the outer orifice* (that is to say, of the *ATOMIZER* nozzle) it is caught by the rotating steam and is perfectly *ATOMIZED*. (Parenthesis and italics ours.)

And further bearing out this contention, reference is again made to the file wrapper and contents of the Stilz patent (Exhibit B–1), where his argument is most significant as showing *HIS OWN CONCEPTION* of what constituted his supposedly novel gift to the public, it is found in paper No. 6, page 3, and reads as follows:

> In applicant's arrangement the conical *LAYER OF OIL* is forced into the rotating current of gas (that is to say, steam, air, or other gaseous medium) because the latter is *CONFINED* in a *NARROW* space

> *SURROUNDING* and *IMMEDIATELY ADJACENT* to the restricted discharge orifice, etc. (Parenthesis and italics ours.)

In paper No. 23, page 4, of the file wrapper and contents (Exhibit B–1) he says:

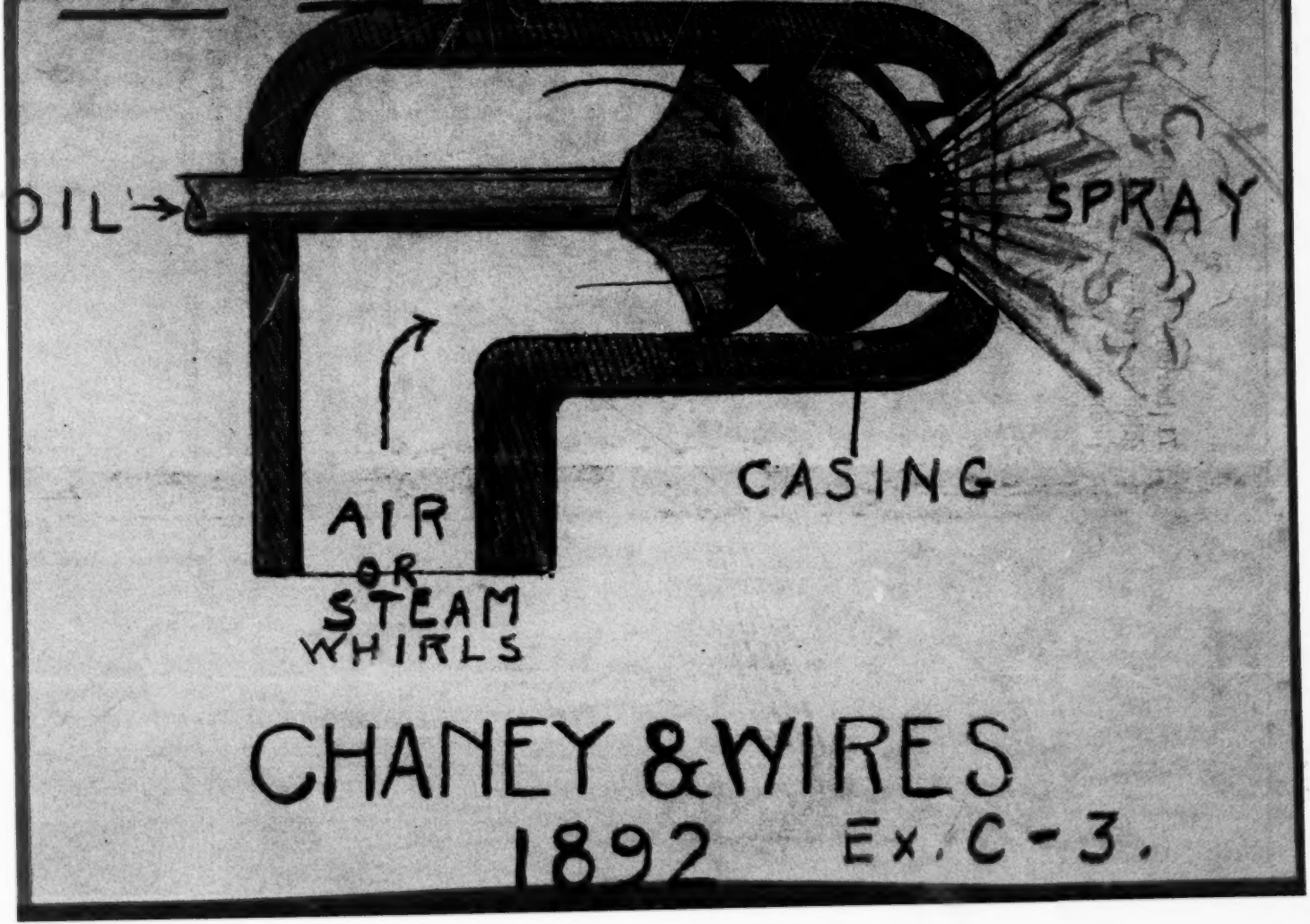
> Applicant has found that only by *concentrating a violently* whirling stream of gas at the *apex* of a cone-shaped *film of liquid* and thus bringing into play powerful centrifugal forces can the heavier liquid be thrown to the outer strata of the stream of gaseous fluid. (Italics ours.)

All of which confirms the contention again repeated that it is the peculiar structure of Appellants integral casing 17 in cooperation with the other parts of his atomizer forming a VITAL AND INDISPENSABLE PART OF THE COMPLETE ATOMIZING NOZZLE THAT CONSTITUTES ANYTHING NOVEL WHATEVER IN HIS WHOLE COMBINATION, AND IT CLEARLY WAS HIS EMPHASIS ON THIS THAT RESULTED IN THE FINAL ALLOWANCE OF HIS PATENT.

That is his alleged gift to the public, and if it were in fact new and therefore a gift, then anyone using that *PARTICULAR* structure in that particular combination performing those particular functions might infringe.

It is to be noted particularly that in setting forth his fourth element which we have just discussed

(pp. 67–71 hereof) he states that the function of the whirling stream of steam, air, or other gaseous medium is to "*penetrate*" the "*film of oil*" issuing from the oil nozzle. This is emphasized for the reason which will be presented more at length later, that in order to come within the terms of his claim even as clearly limited to the casing 17, the steam must be made to "*penetrate*" the *oil film,* and in this connection it must not be lost sight of that there is a great difference between an oil *film* and an oil *spray,* the former being a film or sheet of particles of oil in relatively close contact and *unbroken,* whereas the oil *spray* is a fine mist into which the film of oil has already been broken by its rapid motion in both a rotary and rectilinear direction. The "film" is that part of the cone issuing from the orifice of the oil nozzle that *retains its liquid structure at the apex,* before the tenacity of the particles has been so overcome by the whirling and rectilinear motion that it breaks into a spray or mist or fog; this film or liquid portion extends for about one-quarter to one-half inch from the oil orifice, when it becomes disintegrated into the spray. Stilz breaks up or *atomizes the film at its apex* as it issues from the oil nozzle and *inside his atomizer casing 17* by his *violently* rotating *steam,* thus forming a spray which he *then* mixes with air for combustion. (Appellee allows the film to break up by its *own motion into a spray* and *then* mixes with this spray a rela-



CHANEY & WIRES

1892 Ex. C-3.

tively *mildly* moving current of air for combustion entering through the air register.)

While leaving the argument as to the novelty of this fourth element, which is the only possible novel feature of his whole patent, to the later discussion under the head of "Validity," etc., attention is briefly invited to the fact that this very allegedly novel fourth element of—

> means surrounding said nozzle for producing a whirling stream of gaseous fluid directed so as to penetrate said film of oil—

was old when Appellee claims to have invented it and is shown in substantially identical form and having the same function, mode of operation, and result in the patents to Armstrong (Exhibit C–12), (see illustration p. 108) Pages (Exhibit D–2), (see illustration p. 106) Lee (Exhibit C–14), (see illustration p. 106) Kermode (Exhibits C–8 to C–11), (see illustration p. 104) Billow (Exhibit C–7), (see illustration p. 84) Moore (Exhibit C–5), Chaney and Wires (Exhibit C–3), (see illustration p. 72) Anthony (Exhibit D–9), and others referred to later.

On page 1 of his patent No. 1066161, lines 103 to 109, inclusive, Appellant explains that he, under certain conditions, may shut off the steam for atomization and operate only with the air for combustion. But when so operating he has nothing more than the well-known mechanical atomizer shown in many prior art structures and admitted

by him to be old; hence, by his own showing his invention, if there be any, is the *particular device* accomplishing steam or gaseous atomization, as shown in his figures 3 and 4, for it is only in that that he shows anything even purporting to be new. He therefore can not now contend that that feature is immaterial, or that a device not utilizing that feature is an infringement. (*Grever* v. *U. S. Hoffman Co.*, 202 F. 923; *Goodyear* vs. *Davis*, 102 U. S. 222 at 227 and 228; *Weber Electric Co.* vs. *Freeman Electric Co.*, 256 U. S. 668–677; *Shepard* vs. *Carrigan*, 116 U. S. 593–598; *Hubbell* vs. *U. S.*, 179 U. S. 77–80–82; *Sargent* vs. *Hall Safe Co.*, 114 U. S. 63; *Fay* vs. *Cordesman*, 109 U. S. 408; *Knapp* vs. *Morss*, 150 U. S. 221–227; *Morgan Envelope Co.* vs. *Albany Paper Co.*, 152 U. S. 425–429.)

In conclusion on this point it is pointed out that if the Stilz claim should be broadly construed, according to his contention, so as to cover a structure similar to defendant's in which the furnace box or register encloses and admits whirling air for combustion only to the entrance into a restricted furnace orifice, and this register is held to be equivalent to Stilz's specifically described casing 17—then that is shown in the Meyer patent (Exhibit C–13), the Laing patent (Exhibits D–6 and D–8), illustrated at page 54 hereof, the Bevis patent (defendant's Exhibit D–5), illustrated at page 84 hereof, the structure of the " Norfolk test " (defendant's Exhibit C–17), illustrated at page 78 hereof, and the Normand burners used on the " Paulding "

and shown in Exhibits D–4 and D–7. (See illustrations opposite page 80.) It is then *only* by structurally adding his peculiar casing 17 to the old atomizer that Stilz has given anything having even the semblance of novelty to the public and *that* is not new, as we have pointed out and will later more fully demonstrate.

Without taking the time of the court to again analyze at length claims 6 and 1—the other two remaining claims at issue—it is to be said claim 6 is identically the same as claim 7, except that it does not make a part of the combination the second element of claim 7; that is to say, the lining of refractory material for the hole, which of course was well known and old, as has been already pointed out in the foregoing analysis of claim 7, and its omission could neither broaden claim 6 nor affect the question of what alleged invention claim 6 really covered.

A short discussion of claim 1 appears to be advisable to the extent of pointing out that this claim is more specific than claims 6 and 7, already discussed, and is for a steam or air atomizer *per se* made specifically in accordance with the drawings and description of the specification. It is further limited in like manner to the peculiar structure in which the oil nozzle must have "a small discharge orifice," but this is shown in Laing (Exhibits D–6 and D–8), Bevis (Exhibit D–5), Meyer (Exhibit C–13), Armstrong (Exhibit C–12), Lee (Exhibit C–14), Schutte (Exhibit C–2), and Pages (Ex-

hibit D–2), besides the Normand burners used on the "Paulding," and the structure of the "Norfolk test" (Exhibit C–17). The

> "means immediately adjacent to said orifice for producing a whirling motion in the liquid fluid passing therethrough"

are likewise shown in the above-mentioned exhibits.

> "A casing surrounding said nozzle and having a restricted discharge port concentric with said orifice, and means for causing a gaseous fluid passing through the space within said casing to enter said port in a whirling current"

is found in Kermode (Exhibits C–8 and C–11), Armstrong (Exhibit C–12), Lee (Exhibit C–14), Schutte (Exhibit C–2), and Anthony (Exhibit D–9). (See index of illustrations of these patents.)

So that this claim, *unless it be limited to the exact form described and illustrated in the drawing, clearly lacks novelty* (Clough v. Barker, 106 U. S. 166 at bottom of page 176 and top of page 177), and even if so limited is void for the same reason and because clearly anticipated by structures in the prior art, as will be more at length demonstrated later on.

It is evident, we think, from what has preceded that the Court of Claims was correct in its opinion found on page 15 of the transcript of record, where it said:

> "We have been unable after mature deliberation to escape the conclusion that the

> plaintiff's claims to invention may not, under the law, be accorded a wider scope than the bringing into existence of improvements to a device old in the art, well known to the public, and in settled use."

On this question of the interpretation and scope of the claims of patent 1,066,161, the opinion of the Circuit Court of Appeals for the Second Circuit involving this patent in a suit by this Appellant against the Babcock & Wilcox Co. is of interest and we think convincing. The alleged infringing device was that shown at page 82 hereof and page 22 of appellant's brief herein. This opinion is not yet reported, but is printed at length as an appendix to this brief, and on page 121 the court by Judge Manton says:

> " The oil did not leave the inner orifice in the conical spray. It has not broken into a spray at this time—it is a continuous liquid cone. If it were a spray, the steam would escape through part of the orifice 19 without producing any effect on the oil. After the oil is atomized, it is impossible to break up the drops. The atomizing *steam must be directed at a point on the conical film of oil emerging from the mechanical atomizer at 14 before the oil has traveled far enough to break into any kind of a spray and the orifice must be restricted to the size of the outlet in 14 in order that the oil film will be caught by the rotating steam to be perfectly atomized.* Outlet port 19 is therefore restricted and the *casing 17 surrounding the nozzle is*

provided for. In other words, port 19 is made small enough so that the mechanical oil film will fill it and act like a valve to prevent the escape of the steam without penetrating the film so that it may be atomized.

In claims 1 and 5 this restricted discharge port means a small opening 19 somewhat larger than the small discharge orifice 14 of the nozzle 12 and in a casing 17 surrounding said nozzle, that is, *so close to it that the gaseous fluid (steam) will be directed into the conical film emerging from the small discharge orifice.* In claims 6 and 7 these elements are described as means surrounding the nozzle for producing a whirling stream of the gaseous fluid (steam and compressed air) directed so as to *penetrate said film of oil, while the hollow cone-shaped film of oil is issuing from the orifice 14 in a nozzle 12.* IT THUS APPEARS THE INVENTION IS LIMITED STRICTLY ON THE FACE OF THE PATENT TO THE STRUCTURES SHOWN IN THE DRAWINGS. (Italics ours.)

THIRD

NONINFRINGEMENT

What Appellee has done and does—Appellee merely utilizes what was already in its possession of the prior art—That which would not anticipate if earlier will not infringe if later—Identity of Appellee's devices with the prior art—The burden is on the Appellant to show infringement.

As early as 1901, the Navy Department made a series of tests of oil burning devices for use on ships

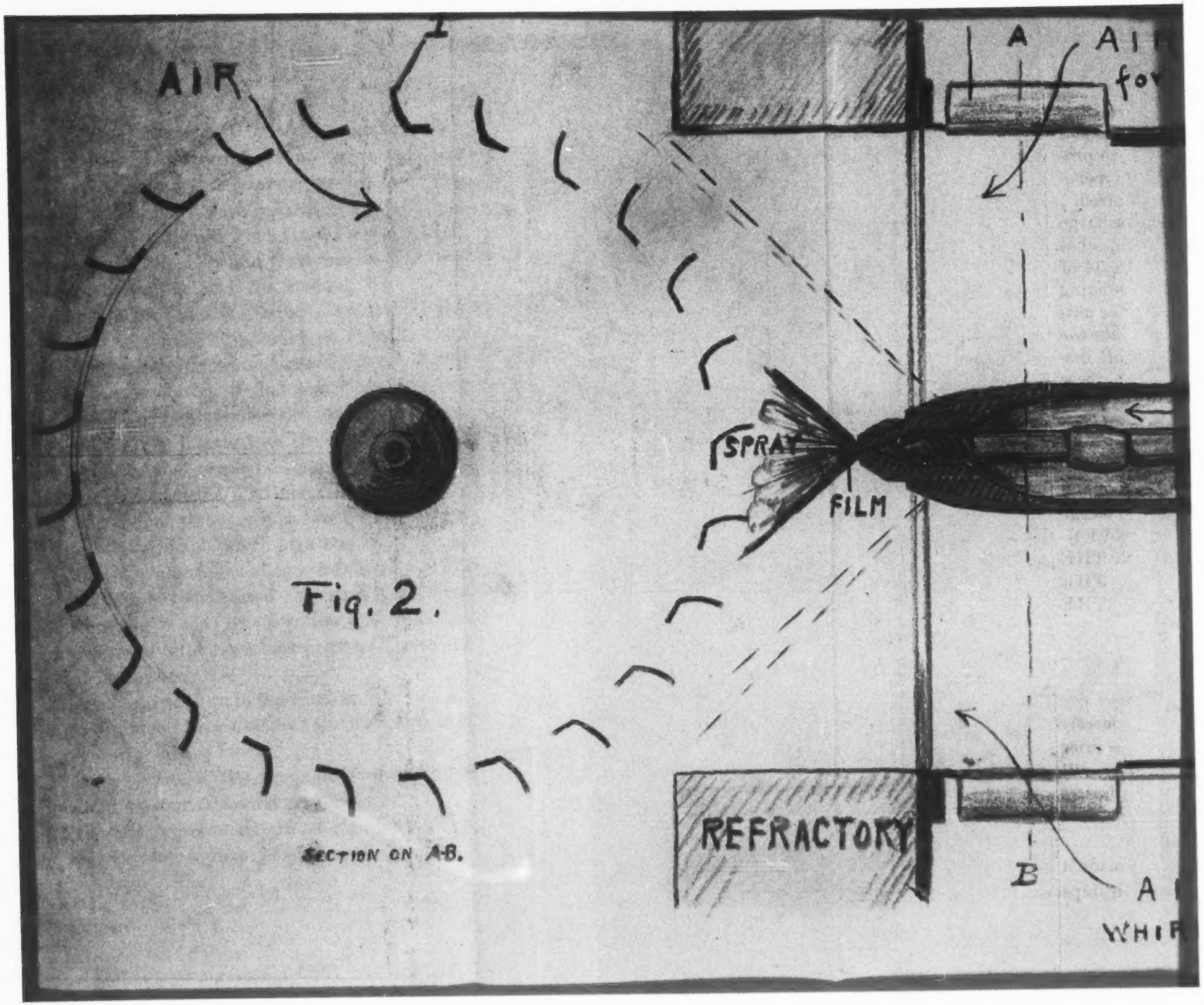
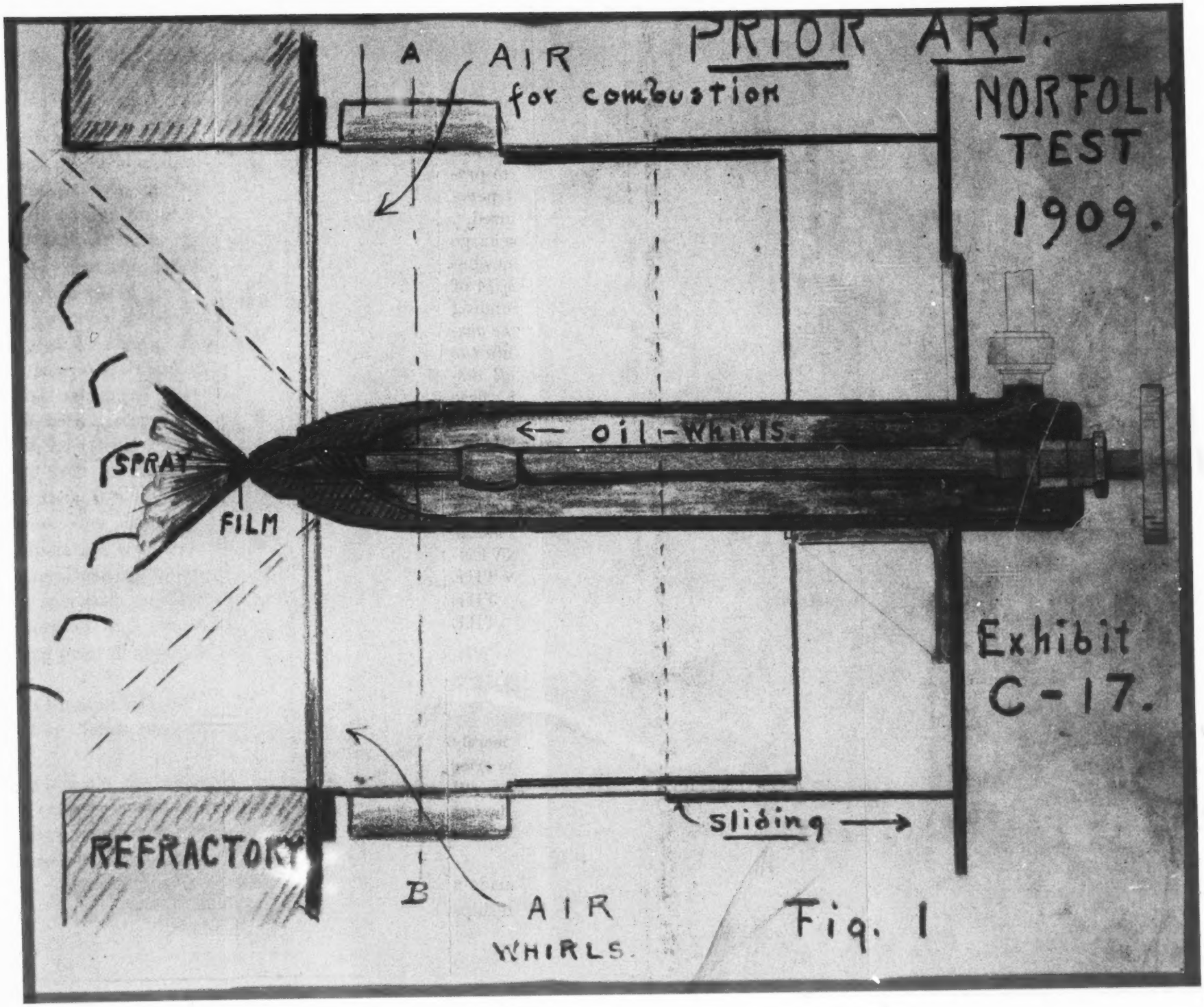


Fig. 2.

SECTION ON A-B.


PRIOR ART.
A
AIR
for combustion
NORFOLK
TEST
1909.
oil-whirls.
SPRAY
FILM
Exhibit
C-17.
sliding
REFRACTORY
B
AIR
WHIRLS.
Fig. 1

of the Navy, the results of which, together with illustrations and descriptions of various devices and installations of both steam atomizers and "mechanical atomizers" were printed in a publication known as the "Liquid Fuel United States Naval Report," published by the Government Printing Office in 1904 (Exhibit C–10, Finding V).

In 1907–1909, the Navy Department devised and tested the structure illustrated in Exhibit C–17 (see illustration opposite page 78); thereafter and as a consequence of that test it rejected the steam atomizer and adopted the mechanical atomizer and in 1910 installed on its vessels *Paulding* and *Drayton* the Normand type of mechanical atomizer and register, (Exhibits D–4 and D–7), (see ilustration, p. 80) which were substantially identical in principle and operation with the devices that appellant now alleges infringe upon his patents; and has since used only such mechanical atomizers, the modes of operation and functions of which were well known long prior to appellant's alleged inventions.

This is clearly shown in the Finding VII and XI, and the opinion of the Court of Claims, page 15 of the transcript of the record.

Identity between the Appellee's devices and Appellant's patents does not exist, because:

If the effects produced are substantially different, there is no indentity; hence no infringement.

79

Even if the effects are the same but the functions essentially distinct, there is no identity; hence no infringement.

Even if the functions are the same but the modes of operation by which they are performed are radically unlike, there is still no identity; hence no infringement. (3 Robinson on Patents, sec. 894, p. 48; *Cimmiotti, &c.*, v. *Amer. Fur.*, 198 U. S. 399–414; *Barley* v. *Witt & Co.*, 216 Fed. 77.)

> Where changes of size, form, or location effect a change in the principle or mode of operation, such as breaks up the relation and cooperation of the parts, this results in such a change in the means as displaces the conception of the inventor and takes the new structure out of the patent. (*Cimmiotti, &c.*, v. *Fur. Co.*, 198 U. S. 399, at 414; *Kokomo* v. *Kitselman*, 189 U. S. 8.)

The object, structure, function, mode of operation, and results of the Appellant's devices, as disclosed in the patents, must be kept in mind in determining whether or not Appellee infringes on Appellant's patents, assuming them to be valid, *for, though the claims may read upon Appellee's structures, and the latter come literally within the terms of the claims, there may be no infringment. The* " law of the machine " is to be kept in mind. (*Burroughs Adding Machine Co.* v. *Felt & Tarrant*, 243 Fed. 861; *Standard Tobacco Co.* v. *Tobacco Stemming Co.*, 237 Fed. 822, 827; *Goodyear Shoe Machinery Co.* v. *Spaulding*, 101 Fed. 990; *Edison* v.

American, &c., 151 Fed. 767, 773; *Curtis* v. *Cramp,* 211 Fed. 124, 135; *Westinghouse* v. *Boyden,* 170 U. S. 537–568.)

In discussing the device used by the Government alleged by appellant to infringe upon his patents in suit, we shall confine ourselves to those specified by appellant in his brief, and illustrated therein on pages 21 and 22.

These are illustrated opposite page 82 hereof and the illustrations are substantially the same as appellant's, except that the numerals which he has applied to the respective parts, and which he has, without foundation taken from the drawings of his patents where they are applied to dissimilar parts, are replaced by letters merely designatory of the parts for the purpose of explanation.

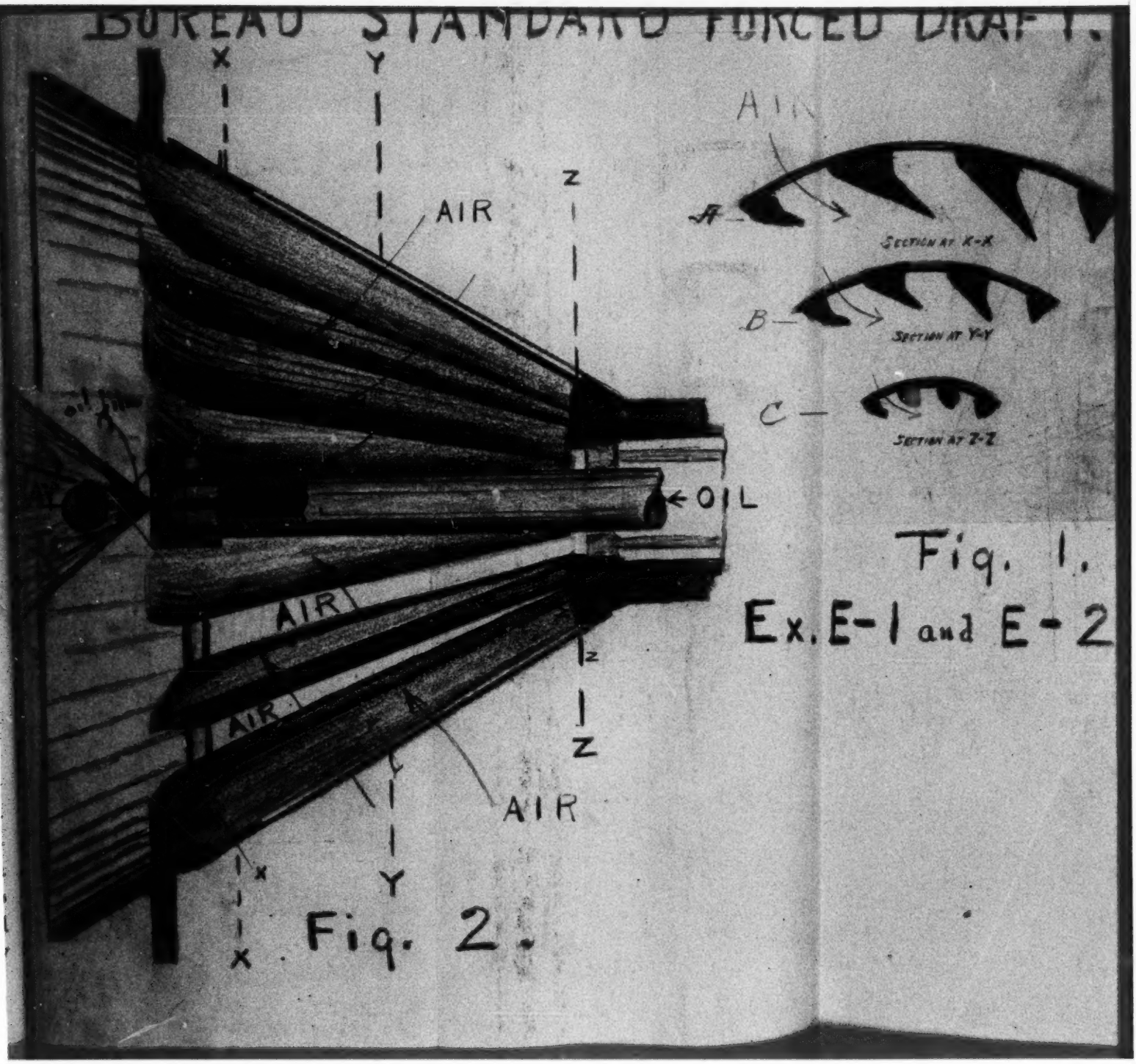
Opposite page 82 is the Government's so-called "Bureau Standard Forced Draft Burner," set forth in Finding VII (par. 1, as Exhibit E–1) of the Court of Claims, which is similar to E–5 and E–6, and corresponds (with the exception of the numerals of parts) to appellant's Fig. A on page 21 of his brief.

Opposite page 82 is the Government's so-called "Bureau Standard Natural Forced Draft Burner," set forth in Finding VII, par. 2, as Exhibits E–3 and E–4, and corresponds with the same exceptions as to numerals to appellant's Fig. C, page 21 of his brief.

Oposite page 82 is the Government's burner manufactured by the Babcock & Wilcox Co., set forth in Finding VIII, paragraph 4, and there called " Peabody register and burner " Exhibit E–7, and corresponds with the same exception as to numerals to appellant's Fig. D on page 22 of his brief.

Appellant's object is to provide a device that will assist in atomizing a cone of oil both by the application of heat and particularly by the breaking up the *cone of oil* immediately on issuing from the oil orifice, by the impact on and penetration of that *oil cone* by a jet of violently whirling steam or other gaseous medium. This he accomplishes through the peculiar and specific apparatus or means indentified as his casing 17, forming an integral part of his atomizer nozzle, which leaves a narrow, shallow mixing chamber 18 in which the steam is confined and violently forced into the cone of oil before it becomes a *spray,* and which *causes* it to become a spray, as has been before exhaustively pointed out.

Appellee found the use of steam or other gaseous medium for atomization unnecessary and unadvisable, because, first, the oil could be satisfactorily heated before passing into the nozzle to be atomized; second, because steam or air under heavy pressure required heavy and expensive apparatus or a waste of water, and third, because results were no better than those secured by plain mechanical atomization employing, as all burners must, be they steam or mechanical, air for combustion.


BUREAU STANDARD FORCED DRAFT.
X
Y
Z
AIR
AIR
AIR
AIR
OIL
A
B
C
SECTION AT X-X
SECTION AT Y-Y
SECTION AT Z-Z
Fig. 1.
Ex. E-1 and E-2
Fig. 2.

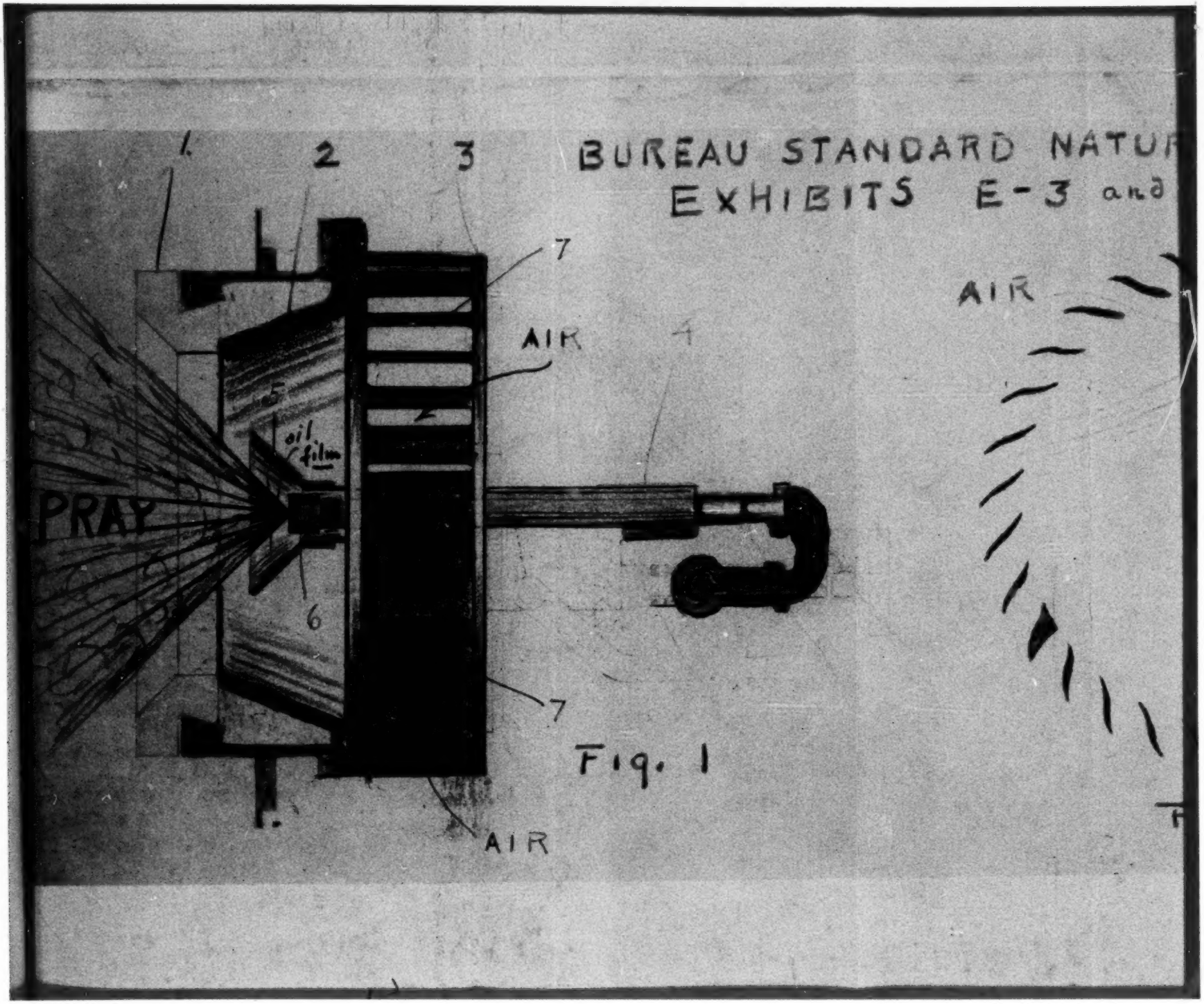

1
2
3
BUREAU STANDARD NATUR
EXHIBITS E-3 and
7
AIR
AIR
oil film
PRAY
6
7
AIR

Fig. 1

BUREAU STANDARD NATURAL FORCED DRAFT.
EXHIBITS E-3 and E-4

Fig. 1

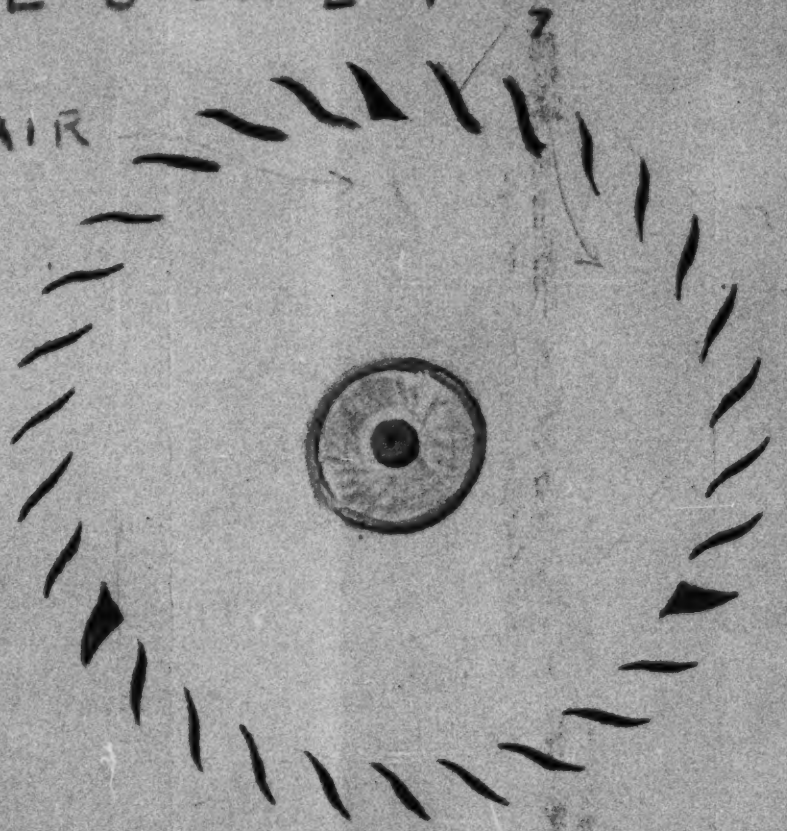
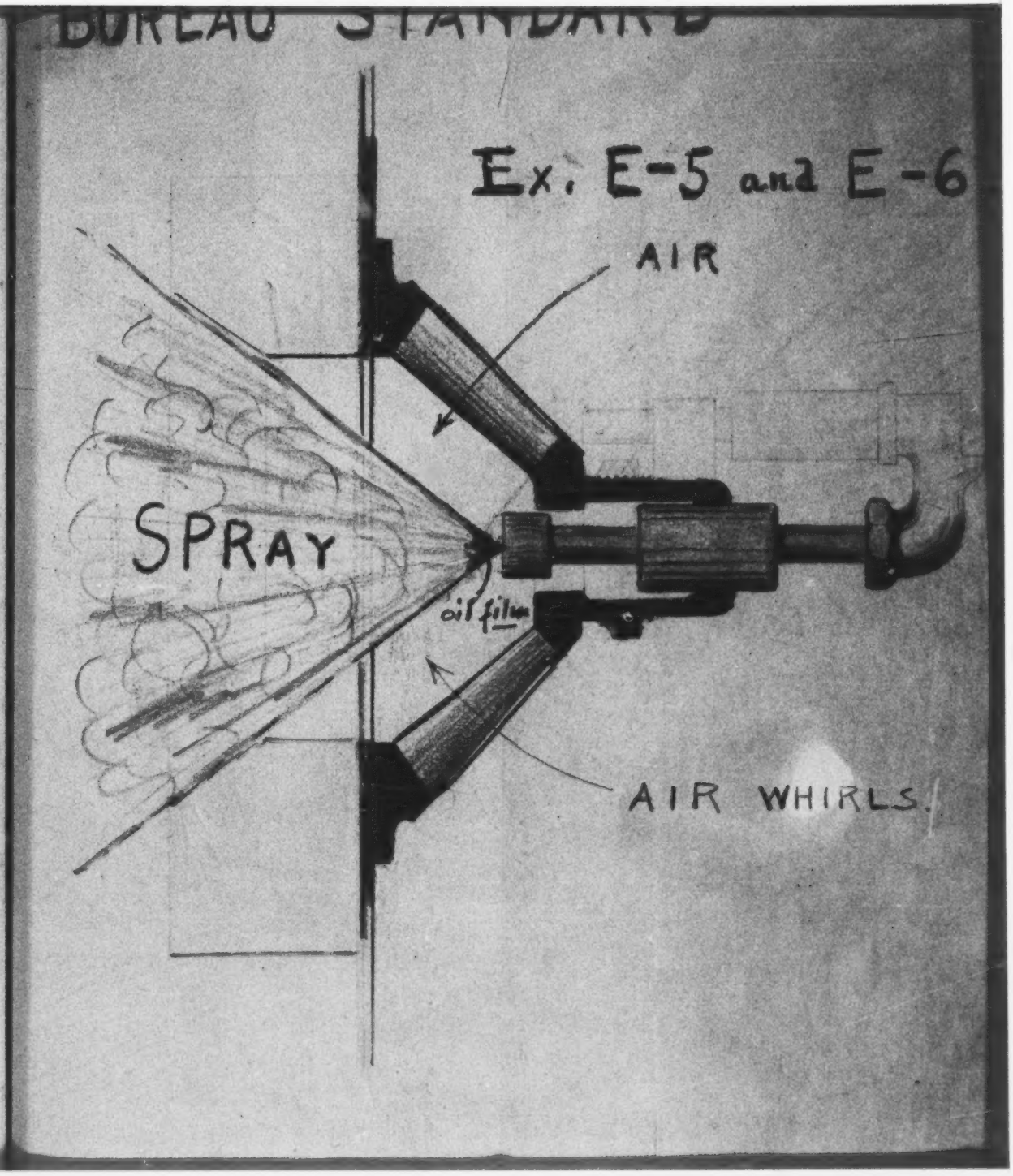


Fig. 2.


BUREAU STANDARD
Ex. E-5 and E-6
AIR
SPRAY
oil film
AIR WHIRLS.

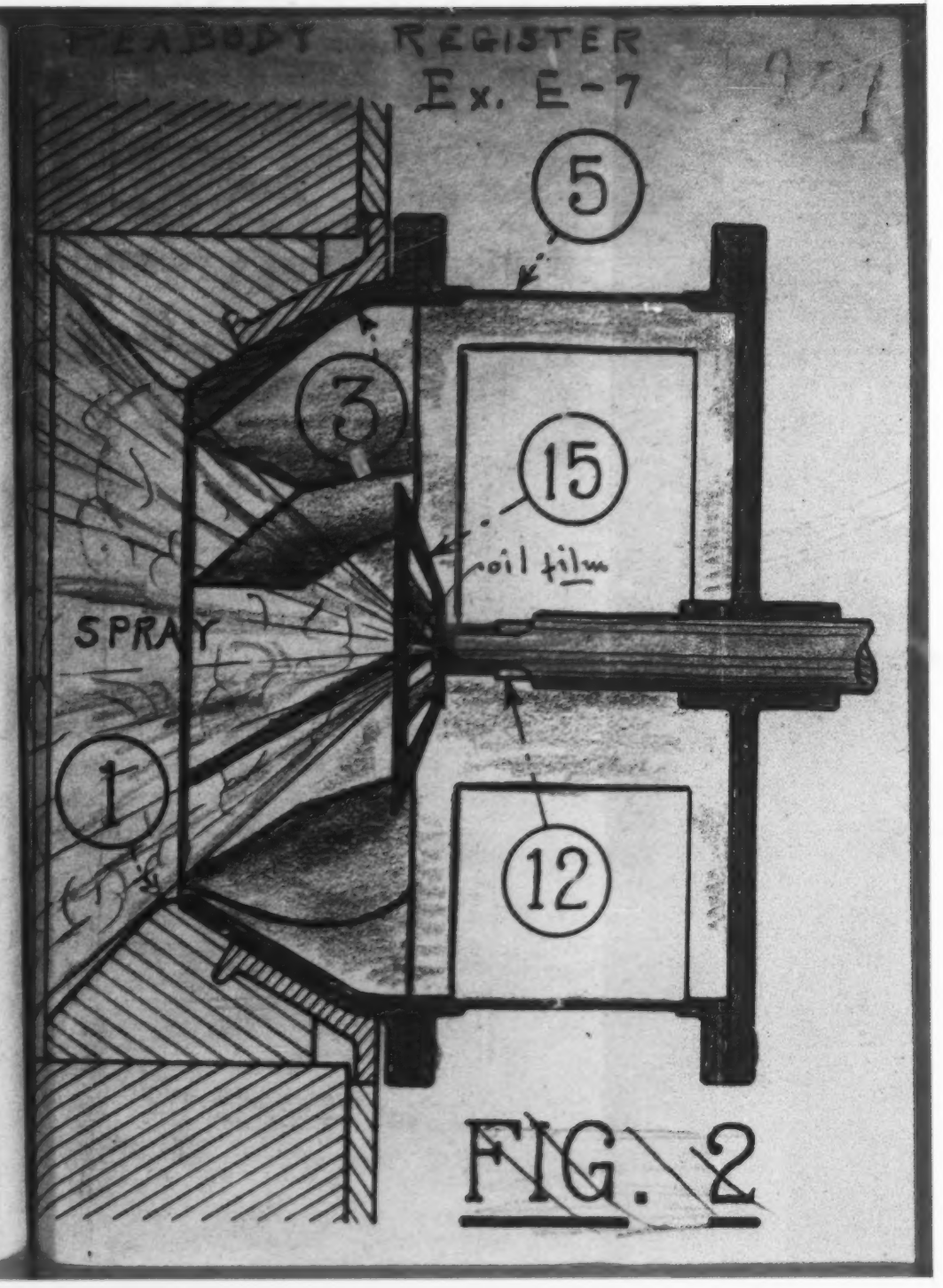


FIG. 2

Appellee does not utilize either the structure, the principle, the function, the mode of operation, nor obtain the result set forth by complainant in his patents. Appellee utilizes, and long before Appellant's patents were granted did utilize, old and well-known means or structures operating on different principles, performing different functions by different modes of operation and attaining a different result. Appellee's object is to atomize the oil *mechanically* into a cone of *spray* and to mix with the *spray* so atomized a *mildly* moving current of air for combustion.

In order to show the difference it is pointed out that Appellee omits all atomizer "casings" or chambers in which steam, air, or other gaseous medium is brought into contact in any way so as to *atomize the oil or assist in atomizing it.*

Appellee atomizes the already heated oil by the well-known methods shown in—

Schutte (Exhibit C–2; see illustration opposite p. 52).

Bevis (Exhibit D–5; see illustration opposite p. 84).

Laing (Exhibits D–6 and D–8). Illustrated page 54.

Meyer (Exhibit C–13).

Liquid fuel report (Exhibit C–10, p. 231).

The device employed in the Norfolk and New York tests (Exhibits C–15 and C–17). Illustrated page 78.

The publication Engineering (Exhibit C–16).

Appellee introduces air only for combustion through ports or openings of the register, as well known and shown in the patent to Billow (Exhibit C–7; see illustration p. 84); publication Engineering (Exhibit C–16), and whirls this air as shown in the following publications:

Normand (Exhibits D–4 and D–7; see illustration opposite page 80).

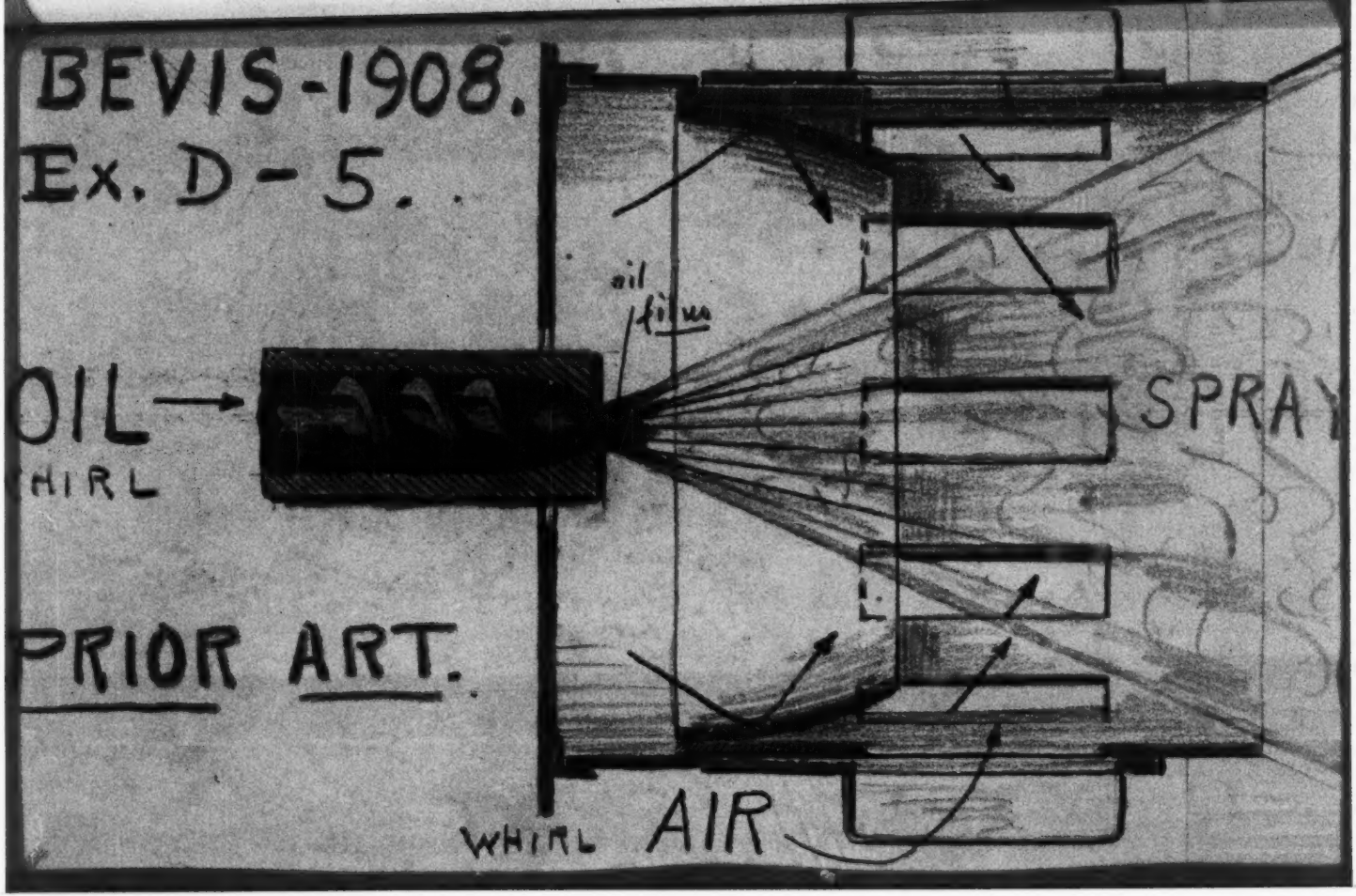
Bevis (Exhibit D–5; see illustration page 84).

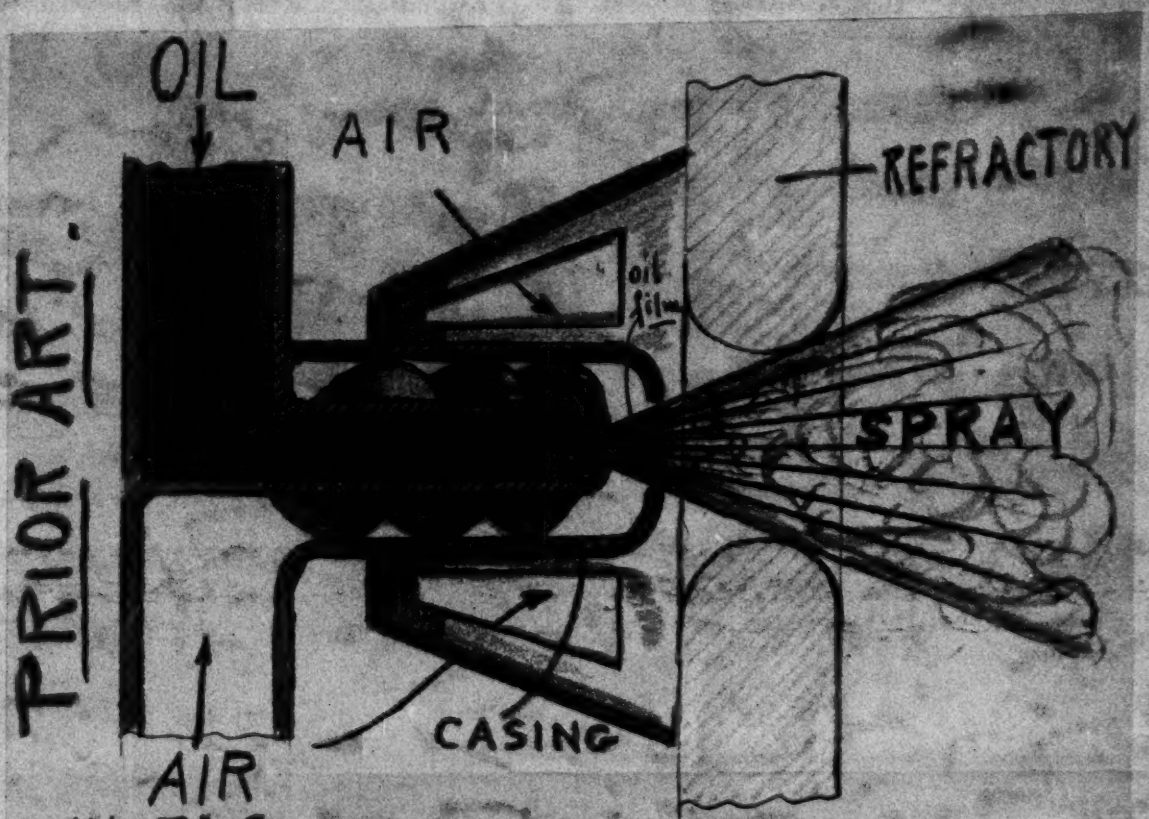
Meyer (Exhibit C–13).

Laing (Exhibits D–6 and D–8; see illustration page oposite 54).

Apparatus used in the Norfolk and New York tests. (Exhibits C–15 and C–17—above referred to; see illustration opposite page 78.)

Appellee directs its mixture of air and *oil spray* through the furnace hole having a refractory lining, shown in the above-mentioned patents to Billow, Bevis, Laing, Armstrong (see illustrations of said patents on pages above mentioned and referred to in list of illustrations) and Meyer, the Norfolk test, the Journal of American Society Naval Engineers, Liquid Fuel Report, and the publication Engineering. This furnace hole is also usually restricted or somewhat smaller than the largest diameter of the register, which feature is also shown in Laing, Meyer, Billow, Corneuve, Liquid Fuel Report (p. 231), and Engineering.

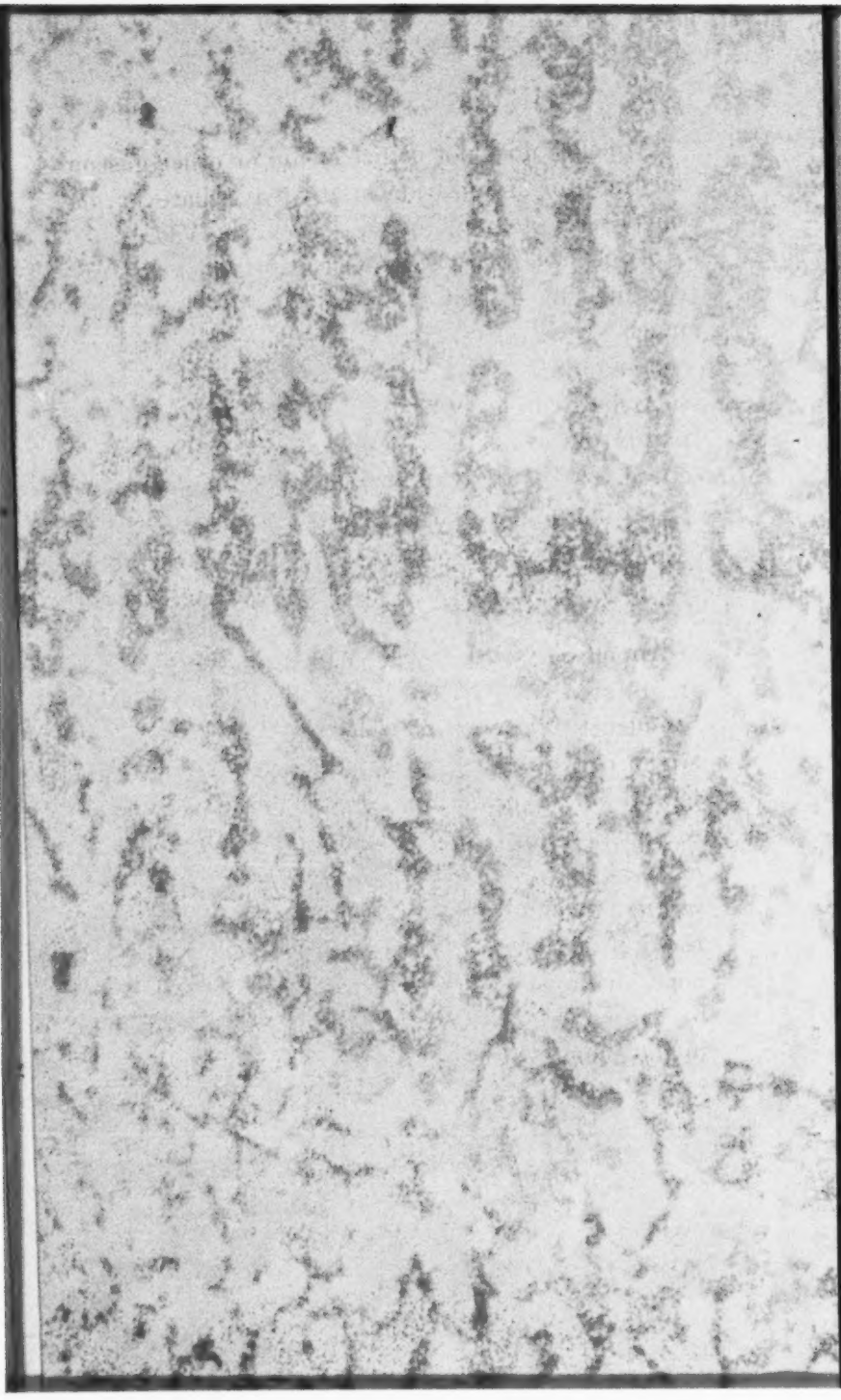

BEVIS-1908.
Ex. D-5.
oil film
OIL
HIRL
SPRAY
PRIOR ART.
WHIRL AIR



PRIOR ART.

BILLOW-1899

Ex. C-7



Appellee does not utilize steam or other gaseous medium for atomization in any way whatever; has never used steam atomizers. Finding VII.

Appellant in his specification, claims, and proceedings in Patent Office, Exhibit B–1, has laid much stress on the fact that in *his* invention the steam or air "penetrates" his oil *film* or cone, so assisting in atomizing it, and, as has been shown, points out that this penetration can only be secured by—

> concentrating a violently whirling stream of gas at the apex of the cone of oil. (See p. 54 hereof, quoting from file wrapper and contents, paper No. 23, p. 4, Exhibit B–1.)

Appellee's air for combustion only, introduced in its structures through the air *register,* is *not* "violently" whirling; is under a relatively very slight pressure; while Appellant's atomizing gas is at a very *high* pressure; and Appellee's air for combustion does not "*penetrate*" the *cone* or *film of oil* at the apex or elsewhere *nor assist in atomizing it,* but merely mixes with the "*spray*" of already atomized oil just prior to entering the furnace, in the same manner as was constantly done by prior devices shown in the art and referred to in the court's Findings V and VI.

PARALLEL COMPARISON OF APPELLANT'S AND APPELLEE'S STRUCTURES AND MODES OF OPERATION

Appellant's	Appellee's
1. Is a steam atomizer.	1. Is a mechanical atomizer.
2. Atomizer embodies a casing forming a steam and oil-mixing chamber immediately surrounding oil nozzle and integral with it.	2. Atomizer consists wholly of an oil nozzle, without any casing or mixing chamber connected with oil nozzle.
3. Steam within casing violently impinges on and penetrates oil cone at its apex atomizing it.	3. Uses no steam or gaseous fluid for atomization. Atomization caused by pressure and rotation of oil as it issues from nozzle.
4. Employs an air register for supplying air for combustion to the furnace, which air mixes with oil spray.	4. Air for combustion enters register in mildly moving current and mixes with oil spray.

Considering in detail the Appellee's structures alleged by Appellant to infringe, and set out in the lower court's Findings VII, Exhibits E–1 and E–2, shown in the illustration opposite page 82 hereof, represents an early form of atomizer and burner used by the Navy Department and developed by it about 1912.

Appellant's patent 1066161, which this structure is alleged to infringe, is dated July 1, 1913; that is to say, a year later. The construction, function, mode of operation, and results attained by this structure are substantially different from either of those of complainant's patents: *First,* it is not a steam or air atomizer, but a mechanical

atomizer, using no gaseous medium whatever for atomization, but only admitting air for combustion. See Court of Claims Finding VII. *Second,* it has no " casing surrounding the oil atomizer having a restricted discharge port and means for causing a gaseous fluid passing through the space within said casing to enter said port in a whirling current," such as is clearly an essential feature of the patent 1066161 and constitutes the third and fourth elements of claim 1. *Third,* the air for combustion does not penetrate the *oil cone or film* so as to assist in breaking it up by a " violent " action due to high pressure and impinging upon it at the apex, but entering as a relatively mild current merely mixes with the spray of already atomized oil to aid combustion only, and has no effect on the atomization. Finding VII.

Exhibits E–3 and E–4 (see illustration, opposite p. 82 hereof) showing Appellee's burners, are different exhibits of the same device. This is also a common mechanical atomizer, not utilizing steam, air, or other gaseous medium for atomization in any way whatever. Court of Claims Finding VII.

The air entering through the register does not atomize the *oil film or cone,* as does the atomizing agent of complainant, but is used to mix with the oil *spray* already atomized, solely for the purpose of combustion. Finding VII. The structure contains no casing surrounding or forming a part of

the atomizer such as is shown in Appellant's patents, and is incapable of functioning like his device; nor does it operate by the same method or attain the same results.

Exhibits E–5 and E–6 of Appellee's structures are different exhibits showing the same device and are substantially the same as Exhibits E–1 and E-2 already discussed on page 86. They show a common mechanical atomizer not utilizing steam, air, or other gaseous medium for atomization. The air entering through the register is only for combustion and does not penetrate or assist in atomizing the oil. Court of Claims Finding VII. It also has no casing forming a part of the atomizer such as is shown in complainant's patents and has a different function, mode of operation, and result.

Exhibit E–7, page 82 hereof, of Appellee's structure is also similar to Exhibits E–3 and E–4. It is a common mechanical atomizer NOT utilizing steam, air, or other gaseous medium for atomization. Court of Claims Finding VII. It likewise has no casing like that of complainant's patents and can not function like complainant's device; nor operate by the same method; nor produce the same result. It is a fact that the testimony of the witnesses for both Appellant and Appellee was emphatic as to the dissimilarity between structures of Appellee and those shown in the Patents in suit. And also as to the difference in modes of operation and functions. Finding VII of the court below resulted therefrom.

In short, defendant's structures employ only elements OLD AND WELL KNOWN, ANTEDATING COMPLAINANT'S PATENTS IN SUIT, AND DO NOT EMPLOY SPECIFIC STRUCTURES OR ALLEGED INVENTIONS OF COMPLAINANT CLAIMED OR ILLUSTRATED, OR ANY EQUIVALENT THEREOF.

In the case of *Westinghouse* v. *Boyden,* 170 U. S. 537, *supra,* the court says, on page 568:

> But even if it be conceded that the Boyden device corresponds with the letter of the Westinghouse claims, that does not settle conclusively the question of infringement. We have repeatedly held that a charge of infringement is sometimes made out, though the letter of the claims be avoided. (*Machine Co.* v. *Murphy,* 97 U. S. 120; *Ives* v. *Hamilton,* 92 U. S. 426, 431; *Morey* v. *Lockwood,* 8 Wall. 230; *Elizabeth* v. *Pavement Co.,* 97 U. S. 137; *Sessions* v. *Romadka,* 145 U. S. 29; *Hoyt* v. *Horne,* 145 U. S. 302.) The converse is equally true. The patentee may bring the defendant within the letter of the claims, but if the latter has so far changed the principle of the device that the claims of the patent, literally construed, have ceased to represent his actual invention, he is as little subject to be adjudged an infringer as one who has violated the letter of a statute has to be convicted when he has done nothing in conflict with its spirit and intent. "An infringement," says Mr. Justice Grier, in *Burr* v. *Duryee,* 1 Wall. 531, 572, "involves substantial identity,

> whether that identity be described by the terms, 'same principle,' same '*modus operandi*,' or any other. * * *. The argument used to show infringement assumes that every combination of devices in a machine which is used to produce the same effect is necessarily an equivalent for any other combination used for the same purpose. This is a flagrant abuse of the term 'equivalent.'"

Therefore, even if the terms of Appellant's claims did read upon and even literally cover the Appellee's structures, still this is no indication of infringement of Appellant's invention, which may be, and in this case palpably is, essentially different from the structure and principle utilized by Appellee.

The fact is not to be lost sight of that Appellant in his argument before the examiner as shown in the file wrapper and contents of his application for patent 1,066,161 (Exhibit B–1; see paper No. 20), distinguishes his structure from Schutte (Exhibit C–2) and Laing (Exhibits D–6 and D–8), and says that they do not show—

> means for penetrating a cone-shaped film of oil with the gas,

and for this reason claims they are not anticipations of his invention; and in argument before the Board of Examiners repeats this argument, saying further that, as regards Schutte—

> Nor by any stretch of the imagination can it be converted into one (a burner) using a

> gaseous fluid to assist in the atomization. (Parenthesis ours.)

But both the Schutte and Laing patents disclose absolutely the principles, functions, mode of operation, and substantially the structures utilized and followed by Appellee. Therefore, if these patents are so different from Appellant's invention that they will not anticipate it, Appellee's structures which are like them can not infringe, since the Supreme Court says:

> The rule is well established that "that which infringes if later would anticipate if earlier." (*Knapp* v. *Morss,* 150 U. S. 221–228; *Miller* v. *Eagle,* 151 U. S. 186; *Peerless* v. *White,* 118 Fed. 827, 835, C. C. A.; *Cleveland* v. *Chicago,* 135 Fed. 783, C. C. A.; *Peters* v. *Active,* 129 U. S. 530, 537; *Thatcher* v. *Burtis,* 121 U. S. 286, 295; *Grant* v. *Walter,* 148 U. S. 547, 554; *Gordon* v. *Warder,* 150 U. S. 47.)

And the converse or corollary in this case is equally true that—

> that which would not anticipate if earlier will not infringe if later.

Appellant contends that Appellee infringes because, as he claims, its air for combustion "*PENETRATES*" the cone or film of oil. (This is denied by Appellee); and Appellant argues that the register or box admitting air for combus-

tion is an equivalent of his atomizer " casing " 17; and that the space within the register where the air for combustion mixes with the *already atomized oil spray without further atomizing it* is the equivalent of Appellant's " shallow confined " space 18; and that the mild current of whirling air for *combustion* entering the register accomplishes the same function that his " violently "whirling atomizing steam does in his mixing chamber 18, and that the reduced diameter of Appellee's furnace hole is an equivalent of his restricted orifice 19. But even if his contention were correct, still these features are all shown in the patents to Laing (Exhibits D–6 and D–8), and substantially in Schutte (Exhibit C–2), neither of which, Appellant says, embodies and so anticipates his real invention. They are also shown in Meyer (Exhibit C–13), and Normand, Bevis, and the other exhibits of the prior art. If, therefore, Appellant's arguments on which he obtained his patent over the references were correct, and these references do not embody or anticipate his patents because they do not show in the case of the Laing patent—

> means for penetrating a cone-shaped film of oil with a gas,

and in the Schutte patent that it can not—

> by any stretch of the imagination be converted into one (a burner) using a gaseous medium to assist in atomization (parenthesis ours),

then Appellee's structures, which are like them in principle, mode of operation, function, and result, and closely follow them in structure, do not infringe. Appellee's devices are substantially identical with the other instances of the prior art cited.

Devices, though not claimed to fully anticipate a patent, are important in their bearing upon the construction of the patent, and upon an alleged infringement. (*Deering* v. *Winona,* 155 U. S. 286.)

If a defendant's devices are identical with the prior art and the patent is new, defendant's device can not be the same as complainant's alleged invention. (3 Robinson on Patents, sec. 1041, p. 306.)

> A patentee can not make an infringement of the thing from which he differentiated his invention in order to obtain his patent. (*Krupp* v. *Midvale Steel Co.,* 191 Fed. 588, 610.)

Another test of infringement required by the courts as determinative is that of interchangeability of parts. It may be briefly stated in the following language:

> Now, noninterchangeability of parts tends strongly to negative infringement. (*Miller* v. *Eagle,* 151 U. S. 186, at p. 208; *Pittsburgh Meter Co.* v. *Pittsburgh Supply Co.,* 109 Fed. p. 644, at p. 651.)

It is evident that the *non*atomizing air register of Appellee can not be substituted for the integral

casing 17 of *APPELLANT*, which *CAUSES* atomization by means of concentration of the violently whirling steam on the oil cone before issuing from the complete atomizer.

It may be repeated here that, assuming the validity of the patents, still Appellant is not entitled to a broad range of equivalents, so that even if Appellee's register and means for adding whirling air for combustion were really a mechanical equivalent for his casing 17, which, of course, is denied, he would not be entitled to prevent Appellee from using it, since he is limited to his specific form of atomizer nozzle, including the integral casing; moreover the functions are different.

> Where the margin of invention is very narrow, the doctrine of equivalents can not be invoked to make out infringement.
>
> *Doze* v. *Smith*, 69 F. 1002.
> *Muller* v. *Lodge*, 77 F. 621.
> *Miller* v. *Eagle*, 151 U. S. 186.
> *Wright* v. *Yuengling*, 155 U. S. 47.
> *Knapp* v. *Morss*, 150 U. S. 221.
> *Bragg* v. *Fitch*, 121 U. S. 478, 483.

Appellant introduced absolutely no evidence which shows infringement, other than his exhibits of Appellee's structures, which utterly fail to sustain his contention.

The burden is on Appellant to establish both the allegation of invention and infringement.

> *Mitchell* v. *Tilghman*, 19 Wall. 287.
> *Price* v. *Kelly*, 154 U. S. 669.

Appellant's argument in his brief (p. 22) referring to the appellee's structures illustrated in his drawings on pages 21 and 22, says:

> "The conical surface within the burner casing, leading to the restricted discharge port 19, drives the whirling current of air in towards its axis of rotation, thereby causing it to *penetrate* the oil film." (Italics ours.)

This is misleading and false, because the whirling current of mildly moving air introduced through the register only for combustion does not penetrate the oil film, which would result in atomizing—in other words, it does not mix with the oil as such before its atomization, but only with the oil *spray after atomization.*

The evidence to this effect was so conclusive that the court below expressly found:

> "No steam, air, or other gaseous fluid was introduced into or used in the burner proper for any purpose, nor used with any part of the equipment for the atomization of the oil, the air supplied through the air register encircling the burner proper being for supplying the oxygen necessary for the combustion of the oil." (Finding VII.)

Appellant's contention is further contradicted by his own statement during the prosecution of his application in the Patent Office quoted on page 57 hereof, which we repeat here:

> "The extremely rigid characteristics of a stream escaping from under a high pressure

> through an orifice are well known. To *penetrate* such a stream with a gas is *impossible by any ordinary means.* Applicant has found that only by concentrating a *violently* whirling stream of gas at the *apex* of a cone-shaped *film of liquid,* and thus bringing into play powerful centrifugal forces, can heavier liquid fluid be thrown to the outer strata of the stream of gaseous fluid. (Italics ours.)

In mechanical atomizers shown in the prior art, which Appellee follows, the air for combustion is mildly not " violently " whirling; by his own admission, therefore, it can not " penetrate " the oil film. This, in itself, distinguishes between the devices and negatives infringement.

On the question of infringement of the claims of patent 1,066,161 the opinion of Judge Manton, of the Circuit Court of Appeals for the Second Circuit, already referred to and to be found in the appendix of this brief, is pertinent and believed to be convincing. It refers particularly to one of the forms of burner also used by the United States, which appellant declares infringes his patent, but the reasoning applies equally to the other alleged infringing burners, except where it refers to a particular part peculiar to the so-called Babcock & Wilcox burner illustrated as Fig. D on page 22 of appellant's brief. Moreover, even if Appellant's contention were correct and the air for combustion in Appellee's structures is directed so as to cross

the path of and commingle with the oil, or oil spray, it does so no more than was done by many instances in the prior art cited, many of which also show the " restriction " either of the metal register casing or the fire-brick-lined furnace opening.

Note especially:

Billow, Exhibit C–7.
" Engineering," Exhibit C–16.
Normand, Exhibits D–4 and D–7.
Laing, Exhibits D–6 and D–8.
Meyer, Exhibit C–13.
Bevis, Exhibit D–5.

The claims of the patents, in view of the state of the prior art, cover a very narrow invention; if the patents are different from the prior art by reason of their limitation to the use of a gaseous medium to atomize the oil, the Government does not use them (*Foley* v. *U. S.*, 260 U.S. 667–677), because the Government follows the prior art; if construed to cover the devices of Appellee, they are void for want of novelty, because the Government follows the prior art. (*Hammond* v. *Goodyear,* 58 Fed. 411.) *Knapp* v. *Morss, supra.*

SUMMARY

In conclusion, on this point showing lack of identity between complainant's patented structures and the defendant's devices and the consequent noninfringement by the defendant of the patents, it may be repeated that the essential difference between the complainant's patents and the defendant's devices is that Appellant breaks up or *atom-*

izes the film of oil at its apex as it issues from the oil nozzle and *inside his atomizer casing 17, forming an integral part of the atomizer proper,* by his *violently* rotating *steam,* thus forming a spray, which he *then* mixes with air for combustion, while Appellee allows the film to break up by its *own motion into a spray* and *then* mixes with his spray a *mildly* moving current of air for combustion entering through the air register.

FOURTH

INVALIDITY

The patents are invalid because they show lack of novelty and invention and are moreover fully anticipated by the prior art.

Aside from the fact that the complainant's patents should if valid be construed to be limited by the prior art to his specific structures, and if so limited will not cover defendant's devices, it is submitted that they are clearly invalid and for the following reasons:

First, because they fail to show invention and indicate only the employment of mere mechanical skill.

Second, because each is disclosed fully and completely by the prior art in at least one instance, and claim 1 of patent 1066161 and claim 2 of patent 945873 are fully met by at least three instances.

A.

LACK OF INVENTION

Complainant has merely shown the ordinary mechanical skill of one skilled in the art of com-

bining the old and well-known structures of the prior art.

There was no invention in taking the *oil nozzle* of Bevis, Laing, Meyer, or Schutte; adding the *steam casing and mixing chamber* of Moore, Chaney and Wires, Billow, Anthony, Reed, Armstrong, Kermode, Pages, or Lee; the *air register* of Billow, Laing, Bevis, Meyer, or Normand; and the *furnace hole* with *refractory lining* of Meyer, Armstrong, Kermode, Bevis, Laing, or Billow.

There is no new function, no new mode of operation, no new and improved result, which are the tests of invention as distinguished from mere mechanical skill in selection or application; and even if better results had been obtained from such combination of old devices, still there would have been lacking the essential element of invention, or that something more than mere mechanical skill which the law requires.

In our opinion every element set forth in these various claims was old and well know before the date of application of these patents, and, furthermore, the identical combinations themselves have been set forth in numerous instances, and the only differences between the structures disclosed in the Stilz patents in suit and covered by the particular claims referred to, and similar structures of the prior art, was a mere matter of mechanical detail which anyone skilled in the art would have been able to supply, and did supply.

Imperial v. *Crown,* 139 Fed. 312; bottom of p. 318 (C. C. A.).

Dunbar v. *Meyers,* 94 U. S. 187; found on p. 197.

Ansonia v. *Electrical, &c.,* 144 U. S. 11.

Palmer v. *Corning,* 156 U. S. 342.

Hailes v. *Van Wormer,* 87 U. S. 353.

Pickering v. *McCullough,* 104 U. S. 310.

Royer v. *Roth,* 132 U. S. 201.

Phillips v. *Detroit,* 111 U. S. 604.

Hollister v. *Benedict,* 113 U. S. 59.

In this connection, the following quotation from the case of *Imperial* v. *Crown, supra,* is made more or less at length:

> The law does not allow mere mechanical skill to usurp the place of invention, which involves higher thought and brings different faculties into activity. It will not allow one to take from the public that which the public already has or grant exclusive privilege which the patent confers without consideration. It therefore is the duty of the courts, which, in the last analysis, are the guardians of the public interest, to scrutinize with care every attempt to establish the monopoly which the patent gives, to examine the state of the art, and to see if the idea expressed in the invention has ever been communicated to the public, and was in such a stage of development in a *prior patent* that a *skilled mechanic* working upon the plan or principle *therein suggested* could by mechanical means attain the result which the patentee attains. (Italic ours.)

Brown v. *King,* 107 Fed. 498 (C. C. A.).
Mast Foos v. *Stover,* 177 U. S. 485 at p. 493–4.
Knapp v. *Morss,* 150 U. S. 221.

Nor is an old result attained in a more economical and efficient way evidence *in itself* of patentable invention. (*Ansonia* v. *Electrical* 144 U. S. 11.)

Even if the test of commercial success is applied, the patents fail to show invention, for by Appellant's own admission his device was not commercially successful. (Appellant's brief, p. 30, par. 2.)

Ideal v. *Crown,* 131 Fed. 244 (C. C. A.).
Shipman v. *Frank et al.,* 237 Fed. 395.

And even if it had been commercially successful it would not follow that the patented combinations show invention necessary to support patentability.

Burns v. *Mills,* 143 Fed. 325 (C. C. A.).
Dowagiac v. *Superior,* 115 Fed. 886.

Even if the patented devices were improvements over the prior art, that in itself is insufficient ground on which to predicate invention—they must show invention, not mere mechanical skill.

Palmer v. *McDermaid,* 54 Fed. 509 (C. C. A.).
Pearce v. *Mulford,* 102 U. S. 112.
Knapp v. *Morss, supra.*

B

Complete anticipation by prior art and consequent invalidity of appellant's patents

The alleged invention covered by claims 6 and 7 of patent 1,066,161, even when *limited* to his exact

structure illustrated in the drawings, is shown, element for element, and in the exact combination, in the patents to Kermode (Exhibits C–8 and C–11), Armstrong (Exhibit C–12), and Lee (Exhibit C–14), except the old use of refractory lining to the furnace in the latter case, which, however, was old and well known and shown in other patents of the prior art cited herein, and especially in Billow (Exhibit C–7).

If *broadly* construed so as to include the air register of Appellee as an equivalent of the steam casing 17 of the patent 1,066,161, it is found, element for element, and in the exact combination, in the additional patents to Laing, Normand, Bevis, Meyer, the publications "Liquid Fuel Report," page 331, "Journal of American Society Naval Engineers," "Engineering," and in the Norfolk and New York tests.

The alleged invention covered by claim 1 of patent 1,066,161, even when *limited* to his exact construction illustrated in the drawings, is shown, element for element, and in the exact combination in the patents to Pages, Armstrong, Anthony, Kermode, and Lee.

If *broadly* construed so as to include the means for supplying air for combustion utilized by Appellee as an equivalent of the steam casing 17 of the patents, it is found element for element and in the exact combination in the additional prior art patents to Normand, Schutte, Meyer, Laing,

the publications "Liquid Fuel Report," "Engineering," and in the Norfolk and New York tests.

The alleged invention covered by claim 2 of patent 945,873 is also fully met both in its *limited* construction contended for, and if so *broadly* construed as to cover Appellee's devices, it is shown in the same patents and publications above set forth in connection with patent 1,066,161.

Every element set forth in these various claims was old and well known before the date of application of these patents, and, furthermore, the identical combinations themselves have been set forth in numerous instances, and the only difference between the structures disclosed in the Stilz patents in suit and covered by the particular claims referred to, and similar structures of the prior art, was a mere matter of *mechanical skill* which anyone skilled in the art would have been able to have supplied. In particular, the French patent, No. 396,476 to Pages (Exhibit D–2), discloses clearly on page 1 the identical device set forth in the Stilz patent 945,873, as covered in particular by claim 2.

In connection with Stilz' patent No. 1,066,161, every element of the three claims in suit are clearly disclosed in the patent to Lee, No. 903,736, of November 10, 1908 (Exhibit C–14), with possibly the exception of the lining of refractory material for the furnace referred to in claim 7. Such refractory linings, however, were in common use in the art and are disclosed in many of the earlier patents, and particularly, for instance, in the Billow U. S. patent No. 630,320, of 1899, (Exhibit C–7).

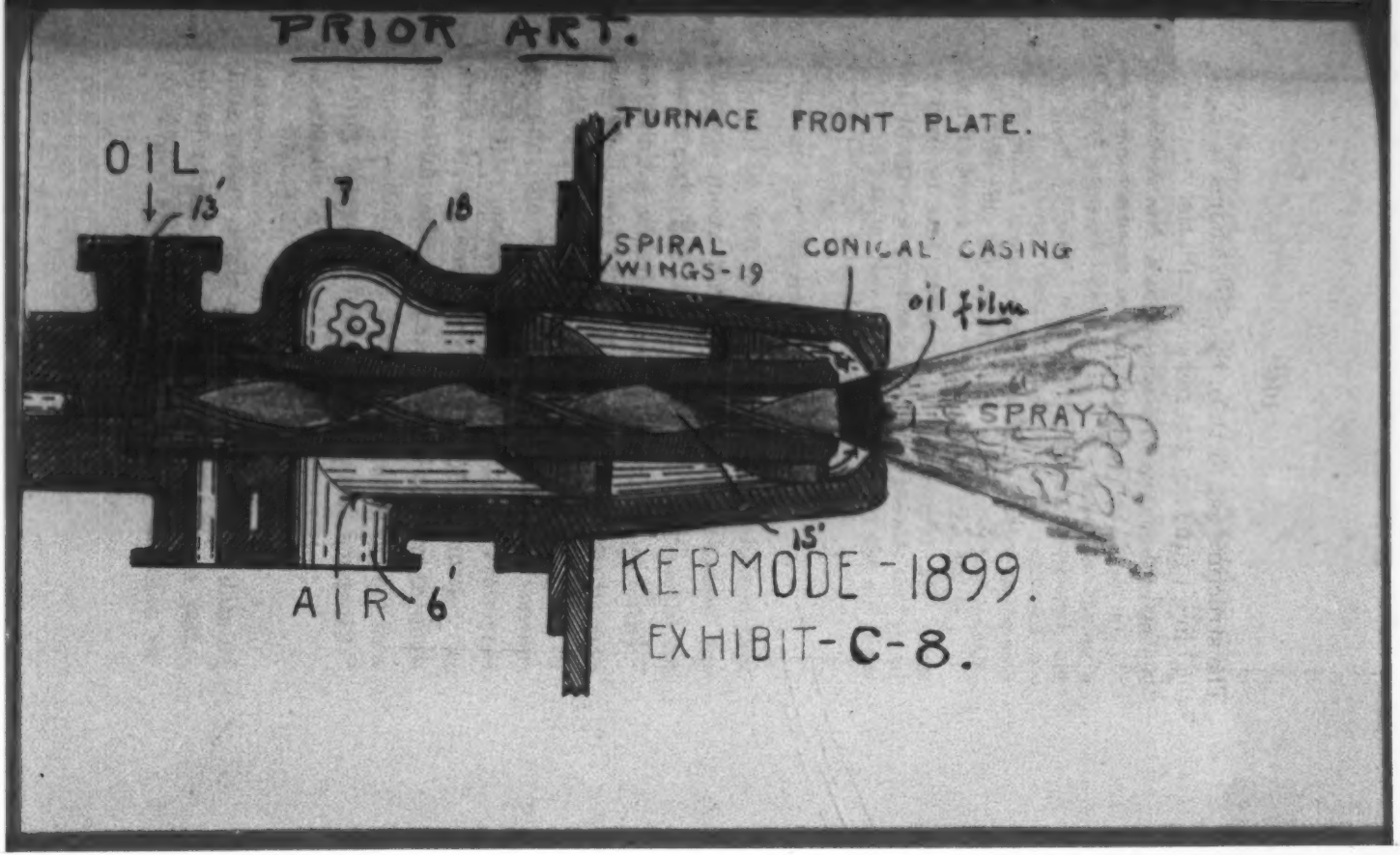
The structure set forth in the Stilz claims is identical in all fundamental respects with the structure disclosed in the Armstrong patent No. 3,089, of 1904, element for element, and in this instance the lining of refractory material of the furnace is also shown. In addition to the above every element of all the claims was disclosed in the prior art in a great many instances, which we have already referred to in considerable detail in our discussion of the prior art. The function and mode of operation of every element in these claims are also old in the art. In fact, every element of these claims has the same function and the same mode of operation as the corresponding elements of the prior art structures. To show this concretely and by specific instance the court's attention is respectfully invited to the following comparison of the patents to Kermode, Exhibit C–8, Pages, Exhibit D–2, Lee, Exhibit C–14, and Armstrong Exhibit C–12, as showing the structures, functions, modes of operation and results of the alleged invention of the patents in suit.

KERMODE.

This patent, which is dated December 5, 1899, shows all the elements of claim 2 of appellant's patent 945,873—that is to say:

CLAIM 2.	KERMODE.
1. A nozzle (1) having a restricted discharge orifice (3).	1. The nozzle 7 having an orifice restricted at its outer end, which may be regulated by adjustment longitudinally of the oil tube 18 (lines 85–88) shown closed in Fig. IX of the patent.

PRIOR ART


PRIOR ART.
FURNACE FRONT PLATE.
OIL
13'
7
18
SPIRAL WINGS-19
CONICAL CASING
oil film
SPRAY
15'
AIR
6'
KERMODE - 1899.
EXHIBIT - C-8.

2. Independent inlets for a gaseous fluid (5) and a liquid (4), there being a passage from each of said inlets to the discharge orifice.	2. The independent inlets 13′ for oil, and 6′ for air, there being a passage from each of said inlets to the discharge orifice.
3. Said passages having a portion in common which forms a mixing chamber. (The annular conical space between the plug (2) and the casing (1) Fig. 2.	3. The passages having a portion (not numbered, but just inside the restricted orifice of the nozzle) in common which forms a mixing chamber. (See lines 95–96.)
4. Each of said passages being arranged to produce a rotary motion in the fluid passing through toward the discharge orifice. (Passages are tengential.)	4. The spiral 15′ (lines 76–79) for the oil; the "spiral wings" 19 for the air (lines 89–91.)

It will be seen without parallel comparison that Kermode meets term for term and element for element claim 1 of patent 1,066,161, the "means for producing a whirling motion in the liquid fuel" being the spiral 15′ of Kermode; the "casing surrounding" the oil nozzle being the casing 7 of Kermode; the "restricted discharge port concentric" with the discharge orifice being the restricted opening in the shell or casing 7 of Kermode; the "means for causing a gaseous fluid passing through the space within said casing to enter said port in a whirling current" being the "spiral wings 19" of Kermode.

PAGES

This patent while dated later than the date of filing of patent 945,873 in suit, contains a statement which shows that the general function of

atomizing fluids by introducing them at an angle into a conical chamber where they whirl and mix and then emerge through a single opening in the form of an expanding cone, was old and well known at the time of applying for the Pages patent—that is in January 1908, before the application for patent 945,873 was filed.

The Pages patent therefore clearly shows the structure of patent 945,873 to be old. It shows the restricted discharge orifice, independent liquid and gaseous fluid inlets with the passage from each to the discharge orifice, having a portion in common forming a mixing chamber, and each passage arranged to produce a rotary motion in the fluid passing through the discharge orifice.

As bearing on patent 1,066,161, Pages is fully and completely anticipatory, showing the nozzle (2) having a small discharge orifice (y); means immediately adjacent to said orifice for producing a whirling motion in a liquid fluid passing therethrough (the tangential passages 1); a casing surrounding said nozzle (3–4) and having a restricted discharge port concentric with said orifice (5), and means for causing a gaseous fluid passing through the space within said casing to enter said port in a whirling current (the tangential passage 8).

LEE

It is thought to be unnecessary to compare the structure of Lee literally and specifically with the patent claims, but examination of the patent to

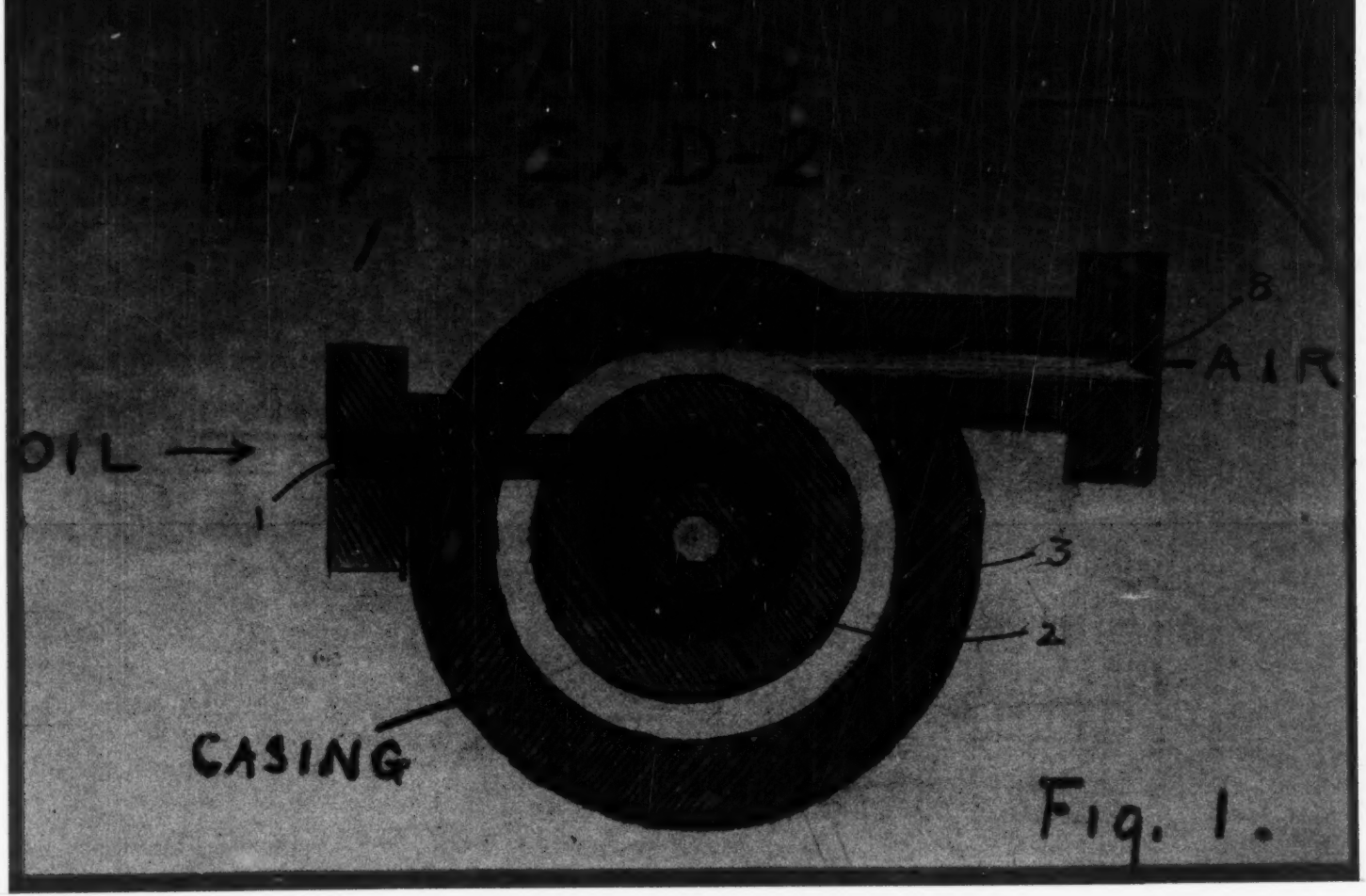
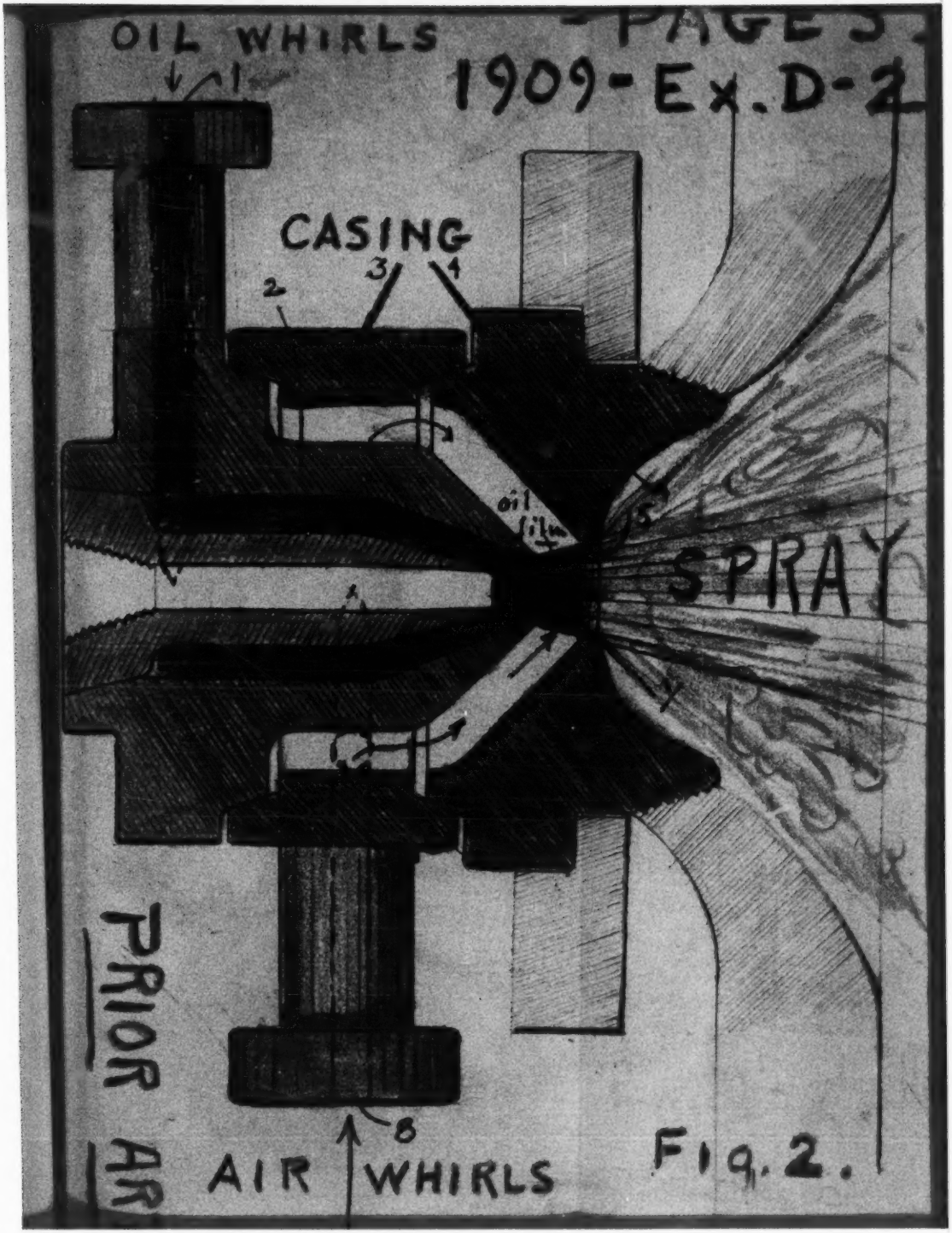
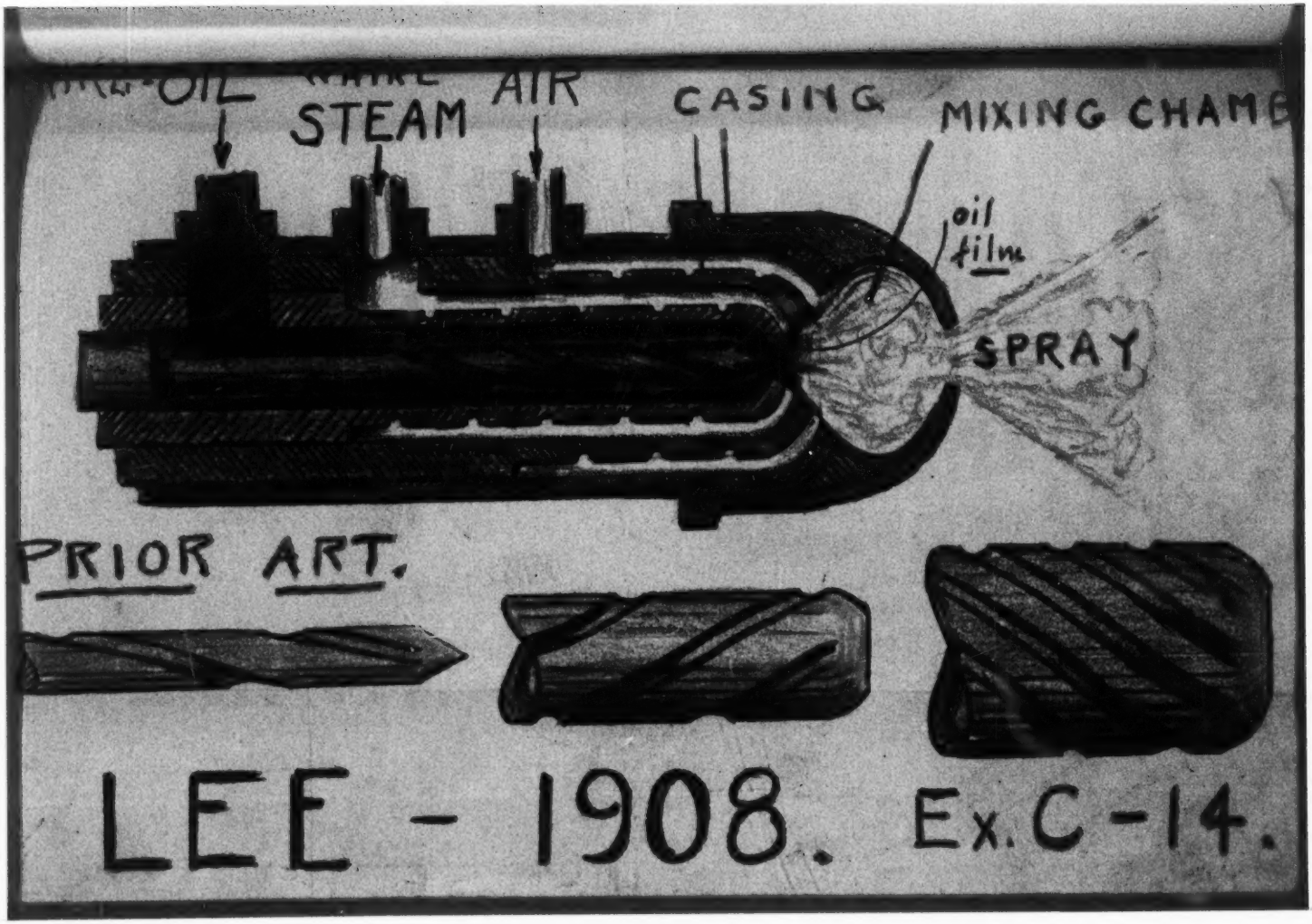


Fig. 1.


OIL WHIRLS
1
1909-Ex.D-2
CASING
3
4
2
oil film
5
SPRAY
PRIOR AR
AIR
6
WHIRLS
Fig. 2.


OIL
STEAM
AIR
CASING
MIXING CHAMB
oil film
SPRAY
PRIOR ART.
LEE - 1908.
Ex. C-14.

Lee shows that all the features of both patents are fully disclosed—the independent inlets for the two fluids, the casing, the mixing chamber, the restricted orifice, the means for whirling both fluids, and particularly the function of causing the whirling gaseous medium to impinge upon and penetrate the oil film at its apex with the casing and before its issuance from the orifice of the casing, resulting in its atomization *in the casing*. Attention is particularly invited to lines 28–36, inclusive, on page 1 of the Lee patent, where spiral grooves are described as causing the "ingredients to be spirally discharged into the mixing chamber in order that an effective mixture of the ingredients be accomplished." The depth of these grooves is merely a matter of degree.

ARMSTRONG

Finally the patent to Armstrong is a complete and absolute anticipation of claim 2 of patent 945,873 and claim 1 of patent 1,066,161, for it not only shows or specifies all the parts comprising the elements of these claims, but it describes the actual mode of operation claimed by appellant to be the gist of his alleged invention. In lines 33–36, page 7, Armstrong says:

> The spraying agent (steam or compressed air) passes from the supply pipe *s* into the annular space between the hollow spindle *h*

> and the outer tube *b'* and issues from the orifice *s'* so *impinging* on the issuing oil stream and *breaking it up* into a fine *spray.*

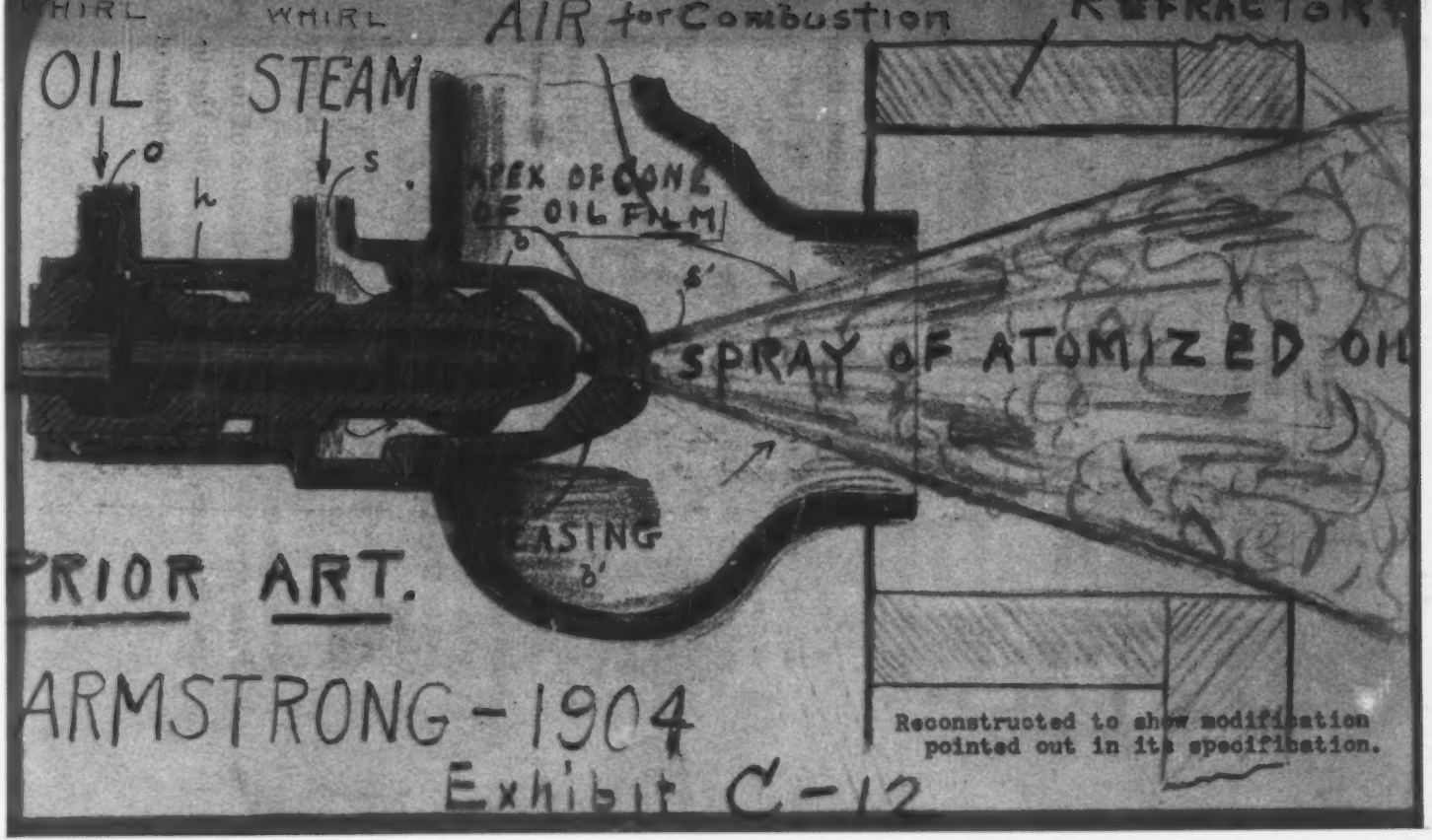
While the drawings of the Armstrong patent do not show means for whirling this air or steam, yet the specification distinctly points out in lines 12–14 (p. 5):

> Spiral ribs or grooves may be provided in the oil and (or) spraying agent passages for the purpose of imparting a rotary movement to the steam.

And we have so illustrated them at page 107. As to claims 6 and 7 of patent 1,066,161, these claims are merely for a combination of the specific atomizing nozzle set out in claim 1 with the well known "furnace having an admission hole through its casing" (as all furnaces have) with additional means for supplying air to the atomized fuel for the purpose of securing complete combustion, and for that only. As has been shown, these additional means for supplying air for combustion are as old as the art of burning oil, are shown in all the exhibits in suit where the atomizer is applied to a furnace, and require no invention.

The "lining of refractory material" made an additional element of claim 7, is equally old, and is shown in many of the exhibits, notably Exhibits C–7, C–12, C–13, D–5, and D–8.

Therefore, both on the ground of lack of invention and complete anticipation, we affirm the invalidity of the patents, and, under the doctrine of


WHIRL
WHIRL
AIR for Combustion
REFRACTORY
OIL
STEAM
o
s
h
APEX OF CONE OF OIL FILM
b
s'
SPRAY OF ATOMIZED OIL
CASING
b'
PRIOR ART.
ARMSTRONG - 1904
Reconstructed to show modification pointed out in its specification.
Exhibit C-12

Imperial v. *Crown, supra,* which we believe to be a principle approved by this court, we respectfully urge the court to so find.

FIFTH

Appellant's failure to comply with the statute requiring him to mark his devices as patented, or give appellee notice of alleged infringement.

Under Section 4900 of the United States Revised Statutes this marking or the giving of actual notice is essentially a prerequisite to the recovery of damages.

The section reads:

> SEC. 4900. It shall be the duty of all patentees, and their assigns and legal representatives, and of all persons making or vending any patented article for or under them, to give sufficient notice to the public that the same is patented, either by fixing thereon the word "patented," together with the day and year the patent was granted, or when, from the character of the article, this can not be done, by fixing to it, or to the package wherein one or more of them is inclosed, a label containing the like notice; and in any suit for infringement, by the party failing so to mark, no damages shall be recovered by the plaintiff, except on proof that the defendant was duly notified of the infringement, and continued, after such notice, to make, use, or vend the article so patented.

The act of 1918 under which this suit was brought provided that—

> The United States may avail itself of any and all defenses, general or special, that might be pleaded by a defendant, in an action for infringement,

This defense of noncompliance with section 4900 was therefore available to the Appellee, and was set up in the court below; and the court found as a matter of fact that—

> It does not appear from the evidence whether the plaintiff gave to the public the notice required by section 4900 of the U. S. Revised Statutes as to the devices of his said letters patent being patented, or that he at any time during the alleged infringement of said letters patent for which recovery is sought by him notified the defendant of such alleged infringement. (Finding XII.)

Since, therefore, the statute makes such marking or notice compulsory, and this court has so held, for it said in *Dunlap* v. *Schofield,* 152 U. S. 244, at p. 248:

> One of these two things, marking the articles, or notice to the infringers, is made by the statute a prerequisite to the patentee's right to recover damages against them. Each is an affirmative fact, and is something to be done by him. Whether his patented articles have been duly marked or not is a matter peculiarly within his own knowledge; and if they are not duly marked, the statute expressly puts upon him the burden of proving the notice to the infringers, before he can charge them in damages. By

> the elementary principles of pleading, therefore, the duty of alleging and the burden of proving either of these facts is upon the plaintiff.
>
> (See also *Coupe* v. *Royer,* 155 U. S. 565 at p. 584.)

and since the court below found there was no evidence that there had been such marking or notice (Finding XII).

We submit that there is no ground for recovery, and that the conclusion of the court below to that effect presents no question of law, the determination of which can lead to reversal.

SIXTH

Appellant's employment by the Government at the time when he made application for patent 1,066,161, precludes him from recovering under this patent.

The Act of 1918 in its third proviso reads:

> Nor shall this act apply to any device discovered or invented by such employe during the time of his employment or service.
>
> *Harley* v. *U. S.* 198 U. S. 229;
> *Moore* v. *U. S.* 249 U. S. 487;
> *Gill* v. *U. S.* 160 U. S. 426.

The court below found as a fact (Finding III):

> On the 8th of May, 1911, the plaintiff, while in the employ of the United States at the Mare Island Navy Yard, filed an application with the United States Patent Office for letters patent on certain improvements in oil burners, upon which application there were granted to him, under date

of July 1, 1913, United States Letters Patent No. 1,066,161, a copy of which is by reference made a part hereof as Exhibit B.

The date of application for a patent is *prima facie* the date of the alleged invention thereof, in the absence of evidence tending to show an earlier date.

McCormack v. *Cleal,* 12 App. D. C., 337;
Mergenthaler v. *Scudder,* 11 App. D. C., 265;
Knapp v. *U. S.,* 46 C. Cls. 601 at 639, 644.

Therefore, since the date of filing of the application is prima facie the date of invention (no earlier date having been shown); since the court found that on that date appellant was in the employ of the appellee; and since the statute expressly precludes such employee from recovery on such a patent, we submit that there can be no recovery under this patent even if infringement had been proven, and that the conclusion of the court below that there could be no recovery presents no question of law, the determination of which can lead to reversal.

SEVENTH

The pending of a suit against another person in another court on a claim for infringement of the same patent here in suit, because of the manufacture of certain devices alleged to have been sold for use of the Government; which suit was pending at the time of filing appellant's petition in the Court of Claims, precludes appellant from recovery from the Government for the use of those devices and should have prevented his appeal to this court from the decision of the Court of Claims.

Section 154 of the Judicial Code is as follows:

> No person shall file or prosecute in the Court of Claims, or in the Supreme Court on appeal therefrom, any claim for or in respect to which he or any assignee of his has pending in any other court any suit or process against any person who, at the time when the cause of action alleged in such suit or process arose, was, in respect thereto, acting, or professing to act, mediately or immediately, under the authority of the United States.

The court below found as follows (Finding XIII):

> At the time of the filing of plaintiff's petition in this suit there were pending in the United States District Courts for the Southern District of New York and the Eastern District of Pennsylvania, respectively, suits by the plaintiff against Babcock and Wilcox Company, of New York City, and the Schutte & Koerting Company, and the Bethlehem Shipbuilding Corporation, of Philadelphia, Pa., for an injunction against each of the defendants in said suits and an accounting by them for profits for alleged infringement by them of the plaintiff's said Letters Patent No. 1066161 in the manufacture and sale by them of certain oil burners, some of which were alleged to have been sold to the United States Navy for installation and use on naval vessels of the United States.

> It appears from the evidence that the suit against the Babcock & Wilcox Company was pending in the court as late as February 14, 1922, and the suit against the Schutte & Koerting Company and the Bethlehem Shipbuilding Corporation as late as January 22, 1923; and it does not appear that either suit has yet been dismissed or otherwise finally disposed of in said courts.

Since this finding, at the trial of the suit against the Babcock & Wilcox Company in the District Court in New York, Plaintiff (this Appellant) withdrew all claim for manufacture for the government. The suit in the Eastern District of Pennsylvania, however, appears to be still pending.

It is submitted, therefore, that the appellant cannot recover under this patent for infringement in the use of devices manufactured for the government by the Schutte & Koerting Company, and the Bethlehem Steel Company, even if such devices did in fact infringe; and that the appellant should not have been permitted to prosecute this appeal in this court, in so far as it relates to the use of such devices by the appellee; and further, that the conclusion of the court below that there could be no recovery presents no conclusion of law the determination of which can lead to reversal.

CONCLUSION

1. As the court below, after considering full and contentious evidence concerning the complicated subject matter, has found as a fact that the appellee

does not use appellant's devices, there is no error in law in the conclusion that appellant can not recover.

2. The patents and the terms of their claims do not cover appellee's devices.

3. The patents are invalid because not embodying invention and because they are anticipated by the prior art.

4. Appellant's failure to show that he complied with the statute requiring the marking of the devices as patented or giving actual notice to the United States, bars him from recovery of damages or compensation even if they had been used.

5. Because he was in the employ of the United States at the time of filing his application for patent 1,066,161, he can not in any event recover on that patent under the act of 1918 (40 Stat. 704) because of the last proviso thereof.

6. Because he has pending in another court a suit against a corporation, which at the time when the cause of action alleged in such suit arose was in respect thereto acting mediately or immediately under the authority of the United States he cannot recover in view of the statute 36 Stats. L. 1135. (Judicial Code, sec. 154.)

Respectfully submitted.

JAMES M. BECK,
Solicitor General.
HARRY E. KNIGHT,
JOHN W. LOVELAND,
Special Assistants to the Attorney General.

February 28, 1925.

APPENDIX

United States Circuit Court of Appeals for the Second Circuit

Harry B. Stilz, appellant, against The Babcock & Wilcox Company, appellee.

Before Rogers, Hough, and Manton, Circuit Judges.

Appeal from the United States District Court for the Southern District of New York. Suit for infringement of patent No. 1,066,161. Decree for defendant; plaintiff appeals. Affirmed.

HARRY B. STILZ,
Appellant in Person.

GIFFORD & SCULL, Esq.,
Solicitors for Appellee.

LIVINGSTON GIFFORD, Esq.,
GEORGE F. SCULL, Esq.,
Of Counsel.

MANTON, *Circuit Judge.*

This suit is for infringement of patent No. 1,066,163 granted July 1, 1913 to appellant. The claims in suit are 1, 5, 6, and 7 and are as follows:

"1. A nozzle having a small discharge orifice, means immediately adjacent to said orifice for producing a whirling motion in a

liquid fluid passing therethrough, a casing surrounding said nozzle and having a restricted discharge port concentric with said orifice and means for causing a gaseous fluid passing through the space within said casing to enter said port in a whirling current.

"5. A liquid spray nozzle having a passage abruptly contracted at one end by a cone-shaped surface into a small deliver orifice, a transverse spiral within said passage and resting against the base of said cone-shaped surface, a casing surrounding said nozzle and having a restricted discharge port in line with said orifice and means within said casing for whirling a gaseous fluid passing therethrough.

"6. In combination, a furnace having an admission hole through its casing, a nozzle having means for projecting a hollow cone-shaped film of oil from a round unobstructed delivery orifice into said furnace through said hole, means surrounding said nozzle for producing a whirling stream of gaseous fluid directed so as to penetrate said film of oil and means for supplying air into the furnace through said hole.

"7. In combination, a furnace having an admission hole through its casing, a lining of refractory material for said hole, a nozzle having means for projecting a hollow cone-shaped film of oil into said furnace through said hole, means surrounding said nozzle for producing a whirling stream of gaseous fluid

directed so as to penetrate said film of oil, and means for supplying air into the furnace through said hole."

Oil burners have been used for many years commercially in burning fuel oil. The inventor says his invention relates to improvements in oil burners in which the oil is atomized principally by mechanical means and has for its object to produce a burner which shall be simple in construction and reliable and efficient in operation. In the patent appellant points out that in burning fuel oil, atomized in passing through the nozzles which spray it in a fine film by mechanical means, it has been necessary for obtaining the best results, to preheat the oil to such an extent that a portion of it will flash into vapor on encountering the lower atmospheric pressure. He points out that with these burners, some trouble has been experienced in starting the fire in a cold boiler without producing considerable smoke. He says that some fuel oils have such a small percentage of volatile matter that it is necessary to preheat the oil to such an extent that a portion of it will flash into vapor as it enters the furnace and that when an ordinary mechanical atomizer such as a spiral (15) and orifice (14) is used, some trouble has been experienced in starting the fire in a cold boiler without producing considerable smoke. In order to secure perfect combustion with this kind of boiler, the inventor says that "a suitably directed jet of steam is a valuable adjunct for securing perfect atomization"; the steam introduced acts on the oil and produces results similar to those produced by the vapor where oils which can be partially vapor-

ized are used—steam is brought into action upon the oil in such a manner that the mechanical action (effect of spiral (15) and pressure on oil) is not interfered with.

The patent provides for a *casing which is placed directly over the end of the mechanical sprayer;* the casing having an annular conical passage leading down to an orifice (14) concentric with the orifice (14) closely adjacent to it, and he directs high pressure steam through the pipe into the annular passage, the steam rotating around the passage (18) and finding its way to the orifice (19) cutting *across* and *into* the *cone* of *liquid oil just emerging from the orifice* (14). When the mixture of steam and oil emerges from the orifice (19) it (is) has(?) the combined energy of the oil pressure in the pipe (9) and the energy given by the rapidly moving steam particles coming through the pipe (10). Oil is *then* broken up into a fine spray under the conditions of the heat and pressure which *would not be sufficient to form such a fine spray if the mechanical atomizer alone were used.* This, his adjunct to his mechanical atomizer, takes the form of the jet of steam. The inventor also shows a preferred form of supplying combustion air. It is a register 4 over the hole 8 in the furnace wall, this register being supplied with openings 5 through which the air will be drawn by the furnace draft; this air will move in a path such that it will impinge upon the spray cone at approximately right angles to the path of the oil drops of the spray. He says he can reduce and even shut off completely the steam jet after his fire has been started and the high furnace temperature reached, the greatest quantity of steam being used when the fire is being

started. One of the objects of the new invention is the ability to shut off this " adjunct " and yet maintain perfect combustion.

The steam may be shut off when the furnace is hot because the heat from the furnace will heat the burner and raise the temperature of the incoming oil so that the mechanical atomization alone will be sufficient to form the required spray. In other words, the steam adjunct is used merely to supplement the mechanical atomizer when working conditions are bad. *It is the atomizing of the oil or the formation of the spray that the inventor is chiefly interested in.* The subsequent combustion is referred to in the patent, for it states that the hole 8 in the furnace is made large enough not to interfere with the cone of oil spray and yet small enough to compel the combustion air flowing through into the furnace through the hole 8 to contact with the atomized oil. The patent points out that the inventor can either cause the spray cone to completely fill the hole 8 or to pass through the hole spaced from its edge. This will depend on the distance of the burner from the opening 8 and on the angles of the spray cone and this latter in turn will depend on the adjustment as to a steam flow and oil pressure. There is refractory surrounding the hole 8 and after the burner has been in operation a short time, the heat from this refractory will assist the combustion, the oil spray and the combustion air having been mixed somewhat at least before reaching this refractory. In operation, it was found that the inventor's burner atomized perfectly without the steam jet and when the temperature or pressure or both were dropped until the mechanical

atomizer would not atomize, then on turning on the steam jet, atomization would be produced.

It was found also that the mechanical atomizer must be working to at least such an extent that a cone of liquid would be formed beween the orifice 14 and the orifice 19 of sufficient angle to fill the orifice 19, otherwise the stream would simply circulate around the chamber 18 and out of the orifice 19 through the space between its walls and the column of liquid being projected through the orifice 19, and from the orifice 14. Thus the steam jet, in order to have an effect, must be so enclosed that it will be directed into the cone of liquid which emerges from the mechanically atomizing orifice. The oil *did not leave the inner orifice in the conical spray.* It has not broken into *a spray at this time—it is a continuous liquid cone.* If it were a spray, the steam would escape through part of the orifice 19 without producing any effect on the oil. After the oil is atomized, it is impossible to break up the drops. The atomizing steam must be directed at a point on the conical film of oil emerging from the mechanical atomizer at 14 before the oil has traveled far enough to break into any kind of a spray and the orifice must be restricted to the size of the outlet in 14 in order that the oil film will be caught by the rotating steam to be perfectly atomized. Outlet port 19 is therefore restricted and the casing 17 surrounding the nozzle is provided for. In other words, port 19 is made small enough so that the mechanical oil film will fill it and act like a valve

to prevent the escape of the steam without penetrating the film so that it may be atomized.

In Claims *1 and 5* this restricted discharge port *means a small opening 19 somewhat larger than the small discharge orifice 14 of the nozzle 12 and in a casing 17 surrounding said nozzle, that is, so close to it that the gaseous fluid (steam) will be directed into the conical film emerging from the small discharge orifice.* In Claims 6 and 7, these elements are described as means surrounding the nozzle for producing a whirling stream of the gaseous fluid (steam and compressed air) directed so as to penetrate said *film* of oil, while the hollow cone shaped film of oil is issuing from the orifice 14 in a nozzle 12. It thus appears the invention is limited strictly on the face of the patent to the structure shown in the drawings.

In the appellee's device, highly heated oil under high pressure, enters pipe 4′, flows through passages 7′ to the outer ends of tangential passages 12′ into the bottom of a conical recess 15′ where it is whitled as it moves to the orifice 14′, this cone extending a very short distance from one-quarter to one-half an inch. The film then breaks up into fine drops which continue on in straight lines forming a continually enlarging cone of oil spray. The appellee's device does not atomize by the pressure on the oil only. It is a mechanical atomizer, not a combined mechanical and steam atomizer, as is the appellant's. In order to mix combustion air with the oil spray before and as it enters the furnace chamber, the appellee provides an air register over the hole 1 in a furnace wall, this register having openings 5 through which the air enters.

Openings 5 are provided with movable vanes which are used to regulate the size of the openings and therefore the amount of combustion air which will enter the furnace.

These vanes also act to direct the air into the register tangentially make and it whirl. A casing 3 leads from the register to the opening 1, this casing being conical and having spiral blades in it at relatively low pitch to give a relatively slow turning motion to the combustion air flowing into the furnace. The appellant's embodies a combined mechanical steam atomizer either alone or as may be read from Claims 6 and 7, in combination with means for supplying combustion air. Appellee uses a mechanical atomizer only and as a means for supplying combustion air to the oil spray. This specific means is different in many respects from the appeliant's for supplying combustion air. When the appellant's burner is operating, he is using three fluids to produce his result, oil, high pressure atomizing steam or air, and low pressure combustion air, and the appellee uses two only, oil and low pressure combustion air. The appellant can shut off one of the fluids and still have his device working satisfactorily at times, but the appellee cannot shut off one of the fluids without stopping the operation.

Appellant contends that the appellee's mechanical casing 3 surrounding the oil nozzle and the end of the casing as the restricted discharge port reads on Claims 1 and 5—the means for whirling the gaseous fluid being the curved vanes in the casing 3 and the inclined doors at the opening 5. The gaseous fluid of these claims being the combustion air.

The appellant seeks to read Claims 6 and 7 by saying the impeller plate 15 which has become the means for producing the whirling stream of gaseous fluid, directed so as to penetrate the film of oil while the casing 3 and the openings 5 have become the means for supplying air into the furnace. But in making this contention for Claims 1 and 6, the appellant is obliged to designate different parts of appellee's structure to meet the same elements in the different claims. In Claim 1 appellant employs language without regard to meaning of the claim as determined by his specification, and this can be done because the functions of the elements are omitted in that claim. But as to Claim 6, the elements are described by a recital of other functions and appellant necessarily selected the part, from which he argues that it has the function called for, and this part in appellee's structure is not a part which responds to the description of the same element in Claim 1. He argues that the impeller plate 15 is the equivalent of a casing having a restricted discharge port. Notwithstanding the existence and use of both the impeller plate and the cone 3 in appellee's device, as the appellant argues, the impeller plate 15 is the equivalent of casing 3 in appellee's structure. If the two devices were alike in structure or function, there would be no difficulty in reading one or many claims of the patent in suit in the same way on appellee's device, but there is no reason for designating different parts of appellee's

device as the same element in appellant's claims according to whether the claim describes that element generically or specifically.

The sole function of the bladed cone 3 of appellee, is to cause the low pressure combination air to mix thoroughly within the oil spray after the latter is formed and it has nothing to do with the atomization. It is not contended in reading Claims 6 and 7 to designate the air register cone 3 of appellee as a means which directs the whirling steam " so as to penetrate the film of oil." But instead, the impeller blade 15 of appellee is assigned to that element of Claim 6. The air passing through the impeller blade of appellee's device, plays no part in the atomization and does not penetrate the film of oil. The length of the mechanical film of oil in appellee's burner, measured from its apex to the atomizing orifice, is one-quarter to one-half an inch long before the oil breaks into a spray, the length of the cone depending on the pressure and the viscosity of the oil. If air in the appellee's device is to have any function in atomization, it must be directed so as to penetrate said film of oil as it issues from the atomizing nozzle and before it breaks into drops. Air directed in a cone of oil spray will not in any way affect the atomization, whereas a stream of steam or air under high pressure directed into the oil film will have an atomizing effect, the pressure necessarily being sufficient to give velocity to the atomizing medium—steam or air.

We are satisfied that in the appellee's structure the oil is not directed into the oil film but into the oil spray, the air is not moving at sufficient velocity to atomize even if it were directed into the oil film,

and tests made on the appellee's device prove that there is no difference in the atomization, whether the air is flowing or not. The air passing through the slots of the impeller blade is not directed to penetrate the oil film because the impeller blade is too far in advance of the apex of the cone and because the air continues to move away from the axis of the cone rather than toward it. The velocity of the air through the impeller blade 15 would have no effect on the cone of oil film even if it did strike it. In the test made upon the appellee's structure, where the white cards were passed quickly across the oil spray, one with the air on and the other with the air off, it resulted in showing that the oil drops in the two cases were about the same. The inflowing combustion air passing through the appellee's impeller blade 15 could not, in theory or practice, have any effect on the oil atomization so that it does not function like the high pressure steam of the appellant's structure in the matter of atomization. It is apparent that the alleged infringing device will produce a better mixture of the combustion air and the oil spray so as to give more perfect combustion—not atomization—for in appellee's device that is completed by the mechanical atomization alone.

Having reached these conclusions, there is no basis upon which to support the appellant's claim of infringement. We therefore need not consider the question of the validity of the patent which has been argued at bar. The decree below holding that there is not infringement is affirmed.

Decree affirmed.

(Italics in above decision ours.)

○